

TOPIC

INFORMATION UTILIZATION AMONG TRAINEES ON USAGE OF MOSQUITO NETS
PROJECT IN ADANSI NORTH DISTRICT OF THE ASHANTI REGION.

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DECLARATION

I declare that this dissertation, apart from the sources duly acknowledged, is my own work and that no part of it has been submitted for a degree in this Institution or elsewhere.

STUDENT

LYDIA EZIT

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DEDICATION

TO MY PARENTS – MR. AND MRS. EZIT

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I am most grateful to God for seeing me through this project. Indeed, it was a journey full of stress, but, by God's grace and mercies saw me through.

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Acronyms

ACT	Artemisinin-based Combination Therapies (s)
ROFA	Regional Office for Africa (World Health Organization)
B.Ed	Bachelor of Education
CDC	Centre for Disease Control
CHN	Community Health Nurse
CHI	Community Health Inspectors
CPI	Centre for Public Impact
DALY	Disability Adjusted Life Year
ECDC	European Centre for Disease Prevention and Control
FGD	Focus Group Discussions
GHS	Ghana Health Service
GDP	Gross Domestic Product
HIV	Human Immune Virus
HTC	HIV Testing and Counselling
IDRC	International Development Research Centre
IPT	Intermittent Preventive Treatment
ITM	Insecticide Treated Materials
ITN	Insecticide Treated Nets
IRS	Indoor Residual Spray
LLINs	Long Lasting Insecticide Treated Nets
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in Pregnancy
MOH	Ministry of Health

NGO	Non - Governmental Organization
NMCSP	National Malaria Control Strategic Plan
NMCP	National Malaria Control and Prevention
RBM	Roll Back Malaria
RDT	Rapid Diagnostic Test
UNDP	United Nations Development Fund
UNICEF	United Nations International Children Educational Fund
WB	World Bank
WHO	World Health Organization
WMR	World Malaria Report

Abstract

Malaria continues to be a global threat to lives, especially against pregnant women and young children in Africa ((World Malaria Report 2019). The report indicates that an estimated 228 million cases of malaria occurred worldwide in 2018, with Africa Region accounting for 213 million (93%). According to Mba and Aboh (2017) the disease is hyper-endemic in Ghana, accounting for 44% of Out Patients attendance, 13% of all hospital deaths, and 22% of mortality among children less than five years of age. Ghana, like other malaria endemic countries, has evolved strategies, including the use of Insecticide Treated Nets (ITNs) to control the scourge. Through a case study, this research explored the impact of information utilization strategy among trainees on ITNs uses in some communities in Adansi North District of the Ashanti Region. The study adopted qualitative research methodology, based on in-depth interviews, focus group discussions as well as informal observation techniques to gather original evidence. The findings was that information utilization among ITNs trainees in the Adansi North was effective, however, trainees needed to review their strategy on imparting knowledge and education on the ITNs uses to beneficiaries, to ensure success of ITNs projects in the communities. The study has to some extent, attempted to address key questions relating to the role of trainees on mosquito bed net projects, the mode of communication between trainees of ITNs and beneficiary communities, the impact of information dissemination in the ITN project and the extent to which beneficiary communities understand the ITNs bed project. This becomes a useful data for future researchers on ITNs uses and their impact on malaria prevention and control

CHAPTER ONE

1.0 Introduction

Communication lies at the ‘heart’ of public health and plays a pivotal role in promoting core public health objectives, including disease prevention, health promotion and quality of life. The discipline of health communication has existed since the 1970s and is rich with theories, paradigms, debates and methodologies (ECDC Technical Report 2013). Communication is more crucial when it becomes imperative for it to be used in analyzing how information is relayed or shared in the work situation, especially in a professional or skilled work environment (Gulliksen et al, 2009).

It presupposes, that any attempt to utilize information must be backed by an effective communication strategy. As cited in Faerch and Casper (1997), communication strategies are potentially conscious plan for solving what an individual present as a problem in reaching a particular communicative goal. The more levels a communication program can influence, the greater the likelihood of creating and sustaining the desired change.

Information utilization therefore, becomes very critical in managing any policy or strategy that aims at reducing malaria in a country like Ghana. According to the National Malaria Control and Prevention (NMCP), a unit in the Ghana Health Service (GHS), malaria is one of the most devastating worldwide public health problem in history, and, the use of Insecticide Treated Materials (ITMs) including nets is one of the preventive tools in the control of the malaria vectors

Although Ghana had a culture of mosquito net use particularly among students in boarding schools prior to the introduction of treated net in 1998, the use of the treated mosquito nets is still relatively low (ghanahealthservice .org, 2015).

The NMCP together with its development partners including the private sector have implemented a number of strategies aimed at scaling up treated net ownership and use among pregnant women and children under five (ghanahealthservice .org, 2015).

Findings of an NMCP recent survey constructed nationwide in August 2008 indicates treated net usage of 43.0% among children under five years and 32.3% amongst pregnant women (NMCP, 2008). According to the survey, over the last century, efforts have been made to control malaria.

Among the new advances in the control of malaria is the use of personnel in distributing the use of insecticide treated nets, with the focus on identifying and modifying behavioral practices that put individuals at risk of acquiring the disease (ibid).

This study, therefore, explores how effective trainees on a malaria control program, dubbed “bed net project” at some communities in the Adansi North District of Ashanti Region utilize information in communicating to the communities the proper use of mosquito nets. For skilled workers in a professional work environment, the efficiency of information dissemination is extremely important.

This chapter, in addition to the introduction above also, discusses the background, statement of the problem, research objectives and questions, significance of the study, the scope and organization of the study

1.1 Background of Study

The effect of malaria of society has attracted a number of research culminating in execution of strategies to deal with the menace. Bhatt et al (2015) posit that since the year 2000, a concerted campaign against malaria has led to unprecedented levels of intervention coverage across sub-Saharan Africa.

According to Bhatt et al (2015), malaria infection prevalence in endemic Africa halved and the incidence of clinical disease fell by 40% between 2000 and 2015. It is estimated that interventions have averted 663 (542–753 credible interval) million clinical cases since 2000. Insecticide-treated nets, the most widespread intervention, were by far the largest contributor (68% of cases averted) (ibid)

Ghana Multiple Indicator Cluster Survey (MICS) conducted in 2011, indicated in the article “low utilization of insecticide treated bed nets among pregnant women in the Middle Belt of Ghana”, that 3.5 million cases of clinical malaria were estimated to be reported each year in public health facilities. This accounted for 38% of outpatient attendance and 35% of all admissions and 34% of deaths in children below five years of age’. The survey identified *Plasmodium falciparum* malaria as a major contributor to maternal and neonatal mortality in sub-Saharan Africa, accounting for about 25% of all maternal deaths in malaria-endemic areas. The survey adds that Malaria in pregnancy (MIP) is a public health problem in Africa, where about 10,000 women and 11% of

neonates are estimated to die each year due to malaria infection during pregnancy. The main effects of MIP include low birth weight, premature birth, anaemia, and mortality of the newborns'' (MICS, 2011).

In economic terms, malaria is estimated to cause the loss of about 10.6% of Disability Adjusted Life Years (DALYs), around 6% of Gross Domestic Product (GDP) annually, posing economic burden to Ghana government (Ministry of Health, 2009), This scenario, undoubtedly calls for efforts to avert the looming danger emanating from the malaria scourge.

'' However, the effect of malaria interventions across the varied epidemiological settings of Africa remains poorly understood owing to the absence of reliable surveillance data and the simplistic approaches underlying current disease estimates'' Bhatt et al (2015).

That notwithstanding, several efforts are being made globally, through various intervention strategies to address the situation.

We estimate that interventions have averted 663 (542–753 credible interval) million clinical cases since 2000. Insecticide-treated nets, the most widespread intervention, were by far the largest contributor (68% of cases averted). Although still below target levels, current malaria interventions have substantially reduced malaria disease incidence across the continent. Increasing access to these interventions, and maintaining their effectiveness in the face of insecticide and drug resistance, should form a cornerstone of post-2015 control strategies, Bhatt et al (2015:1).

Ghana, like most other countries has a malaria control program that basically relies on the use of Artemisinin-based Combination Therapies (ACTs), Indoor Residual Spraying (IRS), the use of Long Lasting Insecticide Treated Nets (LLINs), and Rapid Diagnostic Test (RDTs) to confirm the presence or absence of the malaria parasite (Atkinson et al., 2009; Ediau et al., 2013; Griffin et al., 2010; Njau et al., 2013; Mubi et al., 2013; Munguambe et al., 2011).

Similarly, Ghana has also launched series of intervention programs to arrest the scourge and prevent malaria deaths.

The core of her strategies has been the resolve to maximize utilization of these interventions to attain the key targets of the National Malaria Control Strategic Plan This project according to the NMCSPP has not been fully achieved (NMCSPP, 2008–2015).

The strategy under the project, among other things, aimed to increase the number of pregnant women sleeping under treated nets from the 2008 levels of 32.3% to 80% by the year 2011.

According to the NMSCP report, ITNs are one of the proven cost-effective components of malaria prevention through vector control approach. Appropriate use of ITN is shown to reduce malaria transmission by about 90%. Use of ITN during pregnancy is shown to reduce miscarriages and stillbirths by 33% (NMSCP Report, 2011).

The report also adds that large quantities of mosquito nets have been distributed in Ghana as part of the country's efforts to improve access to ITN and to achieve universal ITN use coverage. Other organizations and benevolent groups have also distributed. Initially, ITNs were distributed through either a voucher scheme, maternal or child health campaigns by subsidizing the cost, or selling them at the full cost.

Another NMSCP (2016) report further indicates that in 2010, a project was launched during which free mass distribution initiative was introduced to achieve a universal coverage by 2012. As part of the strategy, a door-to-door distribution and hang-up exercise were incorporated into the mass distribution campaign to achieve universal ownership and use. This project yielded dividend, in that these interventions led to an increase in household ownership of ITN from 49% in 2011 to 68% in 2014. The report contends that ITN use among pregnant women in Ghana also increased from around 33% in 2011 to 43% in 2014. This assertion is confirmed by Snow et al. (1988a), that bed nets are used widely in many parts Africa, especially Ghana as approved by through a study that bed nets impregnated with the insecticide Permethrin might prove to be a useful malaria control measure.

However, these efforts are not without challenges, in that lack of access to ITNs and poor knowledge and perception on ITNs and malaria have been previously reported as important barriers to the use of ITNs in parts of Africa. Access does not always result in usage due to sociocultural and logistical reasons.

Evidence from some parts of Ghana, for example, some communities in the Adansi North District, has shown that over 40% of ITNs available in the households go unused, and could erode the gains made in ITN use over the years. For instance, the 2011 NMSCP report as cited in a story by Nana Konadu Agyemang in the *Daily Graphic* of June 2012 revealed that ITNs were being used as fence

wall around backyard gardens of some beneficiaries of the free ITNs, some were also used in covering cocoa peas, while other communities also used them in fishing.

More disturbing, is the situation at Adansi North in the Ashanti Region, described as one of the malaria endemic communities. This study becomes relevant because in these communities much has not been done by way of communication, and this situation is becomes a major problem that motivated this study.

1.2 Statement of Problem

As indicated earlier, abuse and misuse of ITNs pose challenges to the malaria prevention and control program in the endemic communities in the country. This, is besides problems of lack of access to, and poor knowledge and perception on ITNs which have been a challenge not only in Ghana but important barriers to the use of ITNs in parts of Africa (Kolan et al, 2019).

Arguably, access does not always result in usage due to socio – cultural and logistical reasons, and this raises pertinent questions, including trainees’ way of utilizing information to ensure proper usage of the net by the community members. Also, do trainees just carry nets door to door, distribute and leave without an effort in equipping members with a constant information as to why there is a need for its usage?

These questions, amongst others, indicate that the communities may lack the requisite knowledge pertaining to ITNs and malaria, suggesting that they may not use the nets for the purpose for which they were distributed. Hence, there will be the need to evolve pragmatic policies and strategies to ensure effective communication for the realization of full benefits of the ITNs project, judging from the impact of malaria infection on society, especially on children and pregnant women. For example;

In 2018, an estimated 11 million pregnant women were infected with malaria in areas of moderate and high disease transmission in sub-Saharan Africa. As a result, nearly 900 000 children were born with a low birthweight. Despite the encouraging signs seen in the use of preventive tools in pregnant women and children, there was no improvement in the global rate of malaria infections in the period 2014 to 2018 (WHO Press Release, 2019)

The quotation above underlines the threat posed by malaria, this ties in with the WHO's report that malaria is a threat to 40% of the world's population and, the malaria situation in Ghana is perhaps typical of other sub-Saharan Africa countries like Togo, Nigeria, and Benin, where the disease is ranked first among the ten diseases in health facilities. According to Awine et al (2017), malaria is endemic in Ghana, suggesting that all 27 million inhabitants are susceptible to the infections which accounts for 40.0% of all outpatient attendance, with the most vulnerable groups being children under 5 years of age and pregnant women.

Like endemic areas worldwide, the impact of malaria infections in Ghana has attracted a number of intervention programs over the years, ranging from the use of quinine, which was the first line of treatment to the use of chloroquine and subsequently, the use of anti-malarial drugs such as Artesunate, although these anti-malarial drugs have gone through various revisions since their introduction into the country (Achan et al, 2011).

Similarly, in Ghana, home management of malaria is seen as one of the key strategies in treating malaria, because the first line of treatment usually begins at home. Thus, drugs are usually given at home in addition to the use of ITNs as prevention and control measures.

However, the malaria control program in Ghana, like all other developing countries, is threatened by the development of drug resistance to mono therapies necessitating revisions of treatment policies. Since then, there have been a number of interventions, as established earlier in the argument by Achan et al (2011).

Although malaria affects every part of the country, culminating in the susceptibility of the country's population to the infection (Awine et al, 2017), certain factors predispose some people to getting infected more than others due to socio-economic and cultural beliefs, among others, relating to the causes and treatment of the infection (Kolan et al, 2019).

Also, although there have been studies done on the use of Insecticide Treated Nets (ITNs), little studies have been done specifically on the utilization of information by trainees in carrying out the bed net project. For example, Rhee et al. (2015) explored the uses of ITNs to determine education and malaria knowledge levels between households at Piron, a malaria endemic community in Mali. In Ghana the increasing incidence of malaria resulted in the need to examine the utilization of ITN among caregivers of children under five years in Ho municipality of Ghana. Findings revealed that

in order to ensure a high ITN coverage and utilization, there was the need for continuous distribution of ITNs to households, and that households should be sensitized to use the nets to prevent the continuous spread of malaria (Kolan et al, 2019).

A World Health Organization's World malaria report confirms the use of ITNs as an effective control measure for malaria prevention. The report indicate that the number of pregnant women and children in sub-Saharan Africa sleeping under insecticide-treated bed nets and benefiting from preventive medicine for malaria has increased significantly in recent years (WHO, 2019).

This study, therefore, seeks to contribute to filling the knowledge gap on information utilization among trainees on ITNs project, with a view to examining information sharing strategies among trainees, the uses and impact of ITNs on malaria prevention and control in the Adansi North District of the Ashanti Region.

1.3 Objectives of Study Research

The overall objectives of this study is to explore how trainees utilize information meant to educate beneficiary communities on the use of ITNs. It is therefore an attempt at looking at the role that some trainees play in providing information to people in a mosquito endemic communities in Adansi North.

Specifically, the study;

1. Establishes the role of trainees on the mosquito bed net project.
2. Examine the mode of communication between trainees of ITNs and beneficiary communities.
3. Examine the impact of trainee information dissemination in the ITN project
4. Explore beneficiary communities' understanding of the ITN bed project.
5. To find out other malaria control measures respondents use.

1.4 Research Questions

1. What are the specific roles of trainees on the mosquito bed net project?

2. What is the mode of communication between trainees of ITNs and beneficiary communities?
3. What is the impact of information dissemination by trainees in the ITN project?
4. To what extent do beneficiary communities' understand the ITN bed project?
5. What are the alternative malaria control measures respondents' use?

1.5 Scope of Study

The study is defined within the scope of assessing the role of trainees on the use of mosquito nets in preventing the spread and impact of malaria, particularly in local communities where access to healthcare is a challenge. It specifically, examines how the trainees utilize information in their communication with the beneficiary communities. The study is limited to trainees and beneficiaries of ITN project at Adansi North District of the Ashanti Region.

1.6 Significance of the study

Exploring how information is disseminated is very timely, especially in the governments and international communities' commitment to investing in policies and strategies, in efforts to prevent malaria. Accurate information to a large extent would potentially help prevent the disease and save lives.

For academic purposes it will provide knowledge of trends in the effective uses of communication strategies to enable researchers and policy makers to understand the impact of information utilization and dissemination to malaria endemic areas towards the fight against diseases.

1.7 Organization of Study

The first chapter of this study constitutes the general introduction to the study. The chapter addresses the background to the study and also the research problem. The research objectives, significance and the scope of the study. The Chapter Two reviews the researched literature on malaria control and its impact, the concept of information utilization and the role of trainees. It also reviews studies related to the topic under discussion. Finally, it explains the theory that underpins the study and research questions that will enable the researcher answer the research problem. Chapter Three discusses the methodology adopted to execute the study. Chapter four

discusses the data Analysis and findings of the study. The final chapter (five) consists of the summary of findings and conclusion of the study.

The next chapter discusses the literature relating to the topic for this study by reviewing existing scholarly materials and theories that underpin the study.

CHAPTER TWO

LITERATURE REVIEW

2.1.1 Introduction

This chapter explores how the study relates to previous studies. It discusses the theoretical framework underpinning the study. It highlights the importance of ITNs and their potential to foster the fight against malaria. It further explores, the concept of information utilization and its efficiency in information sharing.

According to World Health Organization (WHO) Malaria threatens the lives of 3.2 billion people globally and leads to over one million deaths annually (World Malaria Report, 2005). The disease is hyper-endemic in Ghana, accounting for 44% of Out Patients attendance, 13% of all hospital deaths, and 22% of mortality among children less than five years of age. Malaria still remain a major problem in Ghana especially among children under five years, with overwhelming majority of the in-patients (41.5%) being children aged 0 – 4 years, while the number of the in-patient cases generally decreases with advancing age (Mba and Aboh, 2017).

Consequently, various interventions and strategies have been adopted by governments and international organizations in an attempt to curb the malaria menace (De La Cruz et al., 2006). Popular among these interventions is Insecticide Treated Nets (ITNs)

ITNs are becoming increasingly available to vulnerable populations at risk of malaria. Their appropriate and constant use is essential for preventing malaria but ITN use often lags behind ITN ownership. In order to increase ITN use, it is necessary to devise strategies that accurately identify, differentiate and target the reasons for non-use (Vanden Eng et. al., 2010).

Educating society, especially in malaria endemic communities on the disease is considered one of the key elements in any strategy but, the impact of education becomes meaningful when the message is efficiently communicated (www.academiaedu, 2013). Thus, when it comes to defeating malaria, health officials may not need to employ complicated techniques but a simple technique like ITN to help prevent malaria by equipping trainees who distribute them with the needed information to be able to empower users to sustain its use. In effect, messengers, in otherwise

trainees, have to effectively utilize the pieces of information meant for the communities (Kumar and Preetha, 2012),

Extensive literature exists on information utilization and its role in education in disease management and prevention in Ghana, in view of the impact of diseases, for example, despite the measures to curb malaria, the disease still remains one of the leading causes of death, especially among children under five years of age in Ghana (Konlan et al, 2019). Therefore, it becomes expedient to explore reasons for causes and find solutions to help curb the disease.

In order to situate this study in context, some relevant literature on the subject matter is reviewed. They include the concept of information utilization, malaria control and intervention, including information dissemination and education, ITNs and information utilization and, the ITNs in Ghana. Also, the literature explores how this study relates to existing studies on information utilization by trainees on diseases, and highlights exemplary studies that show the importance of information utilization in execution strategies, citing other literature to justify the uniqueness of the study. Finally, a theory has been discussed to validate the literature.

2.1.2 Information Utilization

In the context of this study, ‘information utilization’ describes management and analysis of information on ITNs as used by trainees. Analysis of information utilization (AIU) is a method for describing and analyzing how information entities identified in information analysis are being used in the work situation (Bhatt, 2015). In essence, trainees within the ITNs setup on the malaria control programs acquire communication skills and imbibe basic knowledge as skilled workers in a professional work environment, through which they are expected to pass on information efficiently to communities in the mosquito endemic areas (Kenneth et al., 2004).

The core aim of information utilization is to maximize the skills to enable trainees inform the communities about the ITNs, in that the quality of information disseminated would play an important role in determining the quality of services. Such information potentially, provide appropriate evidence linked to ITN use, and facilitate efforts to design appropriate prevention and control strategies for the district, as well as contribute to national malaria-prevention and control policy development (Watiro and Awoke, 2016). This presupposes that, literary every piece of information if well understood and well managed, has the potential to communicate basis for

proper analysis in terms of cost, target audience, type of information, validity, for the benefit of consumers, audience reviews and ratings. Specifically, Insecticide-treated nets (ITNs) reduce malaria morbidity and mortality, but use is limited.

A barrier to ITN use may be lack of knowledge regarding malaria transmission and prevention (Rhee et al., 2015), therefore any attempt to misinform malaria endemic community would further compound the problems associated with the diseases.

Other scholars see ‘information utilization’ from the point of ‘information literacy’, ostensibly linking the concept to people using information entities in their work environment. For example, Paul Zurkowski, proponent of information literacy, describe the concept as:

People trained in the application of information resources to their work, they can be called information literates. They have learned techniques and skills for utilizing the wide range of information tools as well as primary sources in moulding information solutions to their problems (Badke, 2010a, pp. 48–50).

Zurkowski’s description of information utilization is suggestive of the fact that: ‘(1) information resources are applied in a work situation; (2) techniques and skills are needed for using information tools and primary sources; and (3) information is used in problem solving’ (ibid). Zurkowski’s position is that information has intrinsic value, in fact a very key resource in guiding an entity or organization in its decision-making process and that it forms the basis and reference for resolving issues pertaining to skills utilization. The implication is that to utilize information, requires some level of literacy with set of skills, including how to locate and use information needed for problem-solving and decision-making efficiently and effectively.

Similarly, it is expected that trainees as agents of information utilization must go through a learning process if they are to effectively communicate information to consumers. Such a learning process would actively involve acknowledgement as agents charged with the responsibility of effecting changes in an environment.

Besides they should also know when consumers or audience have a need for information, identifying information needed to address a given problem or issue and finding needed information. There is also the need for agents of information utilization to evaluate the information,

organizing the information so that the information could be effectively utilized to address the problem or issue at hand (Reilly, 1998).

2.1.3 Malaria Control

According to Mba and Aboh, (2017), 2017, malaria still remain a major problem in Ghana especially among children under five years, accounting for overwhelming majority of the in-patients (41.5%), but the number of the in-patient cases generally decreases with advancing age. The disease is hyper-endemic in Ghana, accounting for 44% of outpatients attendance, 13% of all hospital deaths, and 22% of mortality among children less than five years of age (ibid). World Health Organization (2005) report indicates that malaria threatens the lives of 3.2 billion people globally and leads to over one million deaths annually.

Abuaku et al., (2005) describe malaria as a serious public health problem, causing more than 1.5 million deaths each year, predominantly among young children, in addition to child mortality, resulting causing severe anemia and cerebral complication in children.

Arguably, this may have serious consequence for long term survival of children as well as hinder education and social development. Malaria infection could impact the course of child development, causing impairment and disability, and other mild diseases with the activation of the immune response system, suppression of appetite, and reduction in the speed of reaction time to compound the burden of malaria (Holding and Kitsao-Wekulo, 2004).

The enormity of the impact of malaria necessitates measures to control and curb the infection rate. The Roll Back Malaria (RBM), a global partnership founded in May 1998 by WHO, UNICEF, UNDP and World Bank, with the goal of helping countries to reduce the global burden of malaria is a typical initiative to control malaria (Kolan et al, 2019). The 2015 goals of the World Health Organization's (WHO's) Roll Back Malaria Partnership, according to these scholars were to reduce global malaria cases by 75% and to reduce malaria deaths to near zero through universal coverage by effective prevention and treatment interventions (ibid). For Nabarro (1999), the major focus of UNICEF in the RBM strategy is at the community level, concentrating particularly on malaria prevention through the use of insecticide-treated nets, community awareness, social mobilization and improved access to quality treatment. Specifically, RBM focuses on the

communities and emphasizes the use of ITNs, which are effective in reducing human contact with mosquitoes (ibid).

Among other preventive interventions for malaria is the use of insecticide treated nets (ITNs), particularly Long-Lasting Insecticide Nets, which WHO recommends for global use because they have been shown to be cost-effective, to reduce malaria episodes among children under 5 years of age by approximately 50% and all-cause mortality by 17% (Kolan et al, 2019).

Results of recent research suggests that ITNs can reduce malaria episodes by 48 to 50%, and if universally used could prevent the disease. But the problem identify by researchers is its usage (Pryce et al, 2018). Scholars see the effects of malaria on society as a scourge because not only does it affect human lives but, it also has a huge drain on global economies (Gallup and Sachs, 2001), hence they need to prevent it.

2.1.4 Prevention of Malaria

Malaria can be prevented by simple interventions such as continuous use of ITN, indoor spraying and use of mosquito repellants (WHO, 2007). In endemic areas, antimalarial measures may include: sleeping in properly screened rooms; use of insecticide-treated mosquito nets without holes; wearing of long sleeved clothing and long trousers when outdoor after sunset; use of mosquito repellants; destroying breeding sites for mosquitoes; as well as killing mosquitoes directly by spraying them with insecticide (CDC, 2007).

Currently, there are concerted efforts to promote and scale-up three-core malaria control intervention; use of insecticide-treated nets (ITNs), intermitted preventive treatment (IPT) during pregnancy and in infants, and prompt and effective treatment of clinical cases with ACTs (WHO/AFRO, 2006).

2.1.5 Malaria Control, Mosquito Nets and ITNs

Sleeping under an insecticide-treated net (ITN) is the most widely adopted preventive measure against malaria in view of its effectiveness, as evidenced in the majority of malaria-endemic regions of the world (Advocacy Brief, 2016). According to experts, ITNs, especially, long-lasting insecticidal nets (LLINs), are not considered only effective but also have the added advantage of

being a cost effective means of malaria prevention at a risk populations (ibid). Insecticides Treated Nets have been proven to be a more effective ways of preventing malaria, as Pryce et al. (2018) confirmed, that whether compared to no nets or to untreated nets, ITNs continue to be effective at reducing child mortality and malaria-related illness in affected areas. The effectiveness of ITNs has attracted a lot of investments to make it available to malaria endemic areas across the globe, hence the distribution of over one billion nets to Africa alone since 2000 (World Health Organization, 2015). According to the WHO, of a US\$1.6 billion invested in malaria commodities in 2014, 63 percent was spent on ITNs – roughly US\$1 billion (World Health Organization, 2015; World Malaria Report 2015). All these actions are geared towards helping to manage and eradicate the disease.

Sarpei – Nunoo (2011) recalls, that nearly 30 years ago, the World Health Organization (WHO) predicted that malaria would never be eradicated, and this forecast painted a gloomy picture in the efforts by scientists to overcome the menace of the disease. But the situation has changed for the better because for the first time since the 1950's, through research by scientists to control the disease (WHO, 2003). For example, Scientists in Canada and Africa have been studying a new twist on an old age method of combating malaria by sleeping under nets that keep mosquitoes at bay (ibid). These are indications that efforts are being intensified by scientist to control the malaria disease as evidenced in Kenya, Ghana, and the Gambia where studies have proven that the innovative use of ITNs is a highly effective method for controlling the spread of malaria (Atieli et al., 2011)

Although some communities in the tropics, especially in sub-Saharan may have been using untreated nets for a long time, these nets are well maintained and used properly to be effective in managing malaria and its impact on society (WHO, 2003). By contrast, nets treated with parathyroid insecticides provide more than a physical barrier; they actually deter mosquitoes from feeding and drive them out of their hiding places. Even a treated net with large holes provides as much protection as a standard one, reducing mosquito bites up to 95%. Simple and safe to use they lend themselves to effective community-based malaria control programs (CDC, 2019).

The indication is that although bed nets form a protective barrier around people sleeping under them, however, bed nets treated with an insecticide are much more protective than untreated nets. Arguably the nets have a have a critical role to play in the intervention and control measure to fight

malaria, hence the WHO recommends for global use, plus the fact that have been shown to be cost-effective, to reduce malaria episodes among children under 5 years of age by approximately 50% and all-cause mortality by 17% (Kolan et al, 2019).

2.1.6 Interventions for Malaria Control – The Insecticide Treated Nets (ITNs) Factor

Several intervention measures have been evolved by health experts towards intervention and control of malaria, in view of its impact of society, for instance, pregnant women living in malaria endemic areas of sub-Saharan Africa are at substantial risk of the adverse consequences of malaria in pregnancy, and each year an estimated 55million pregnancies occur in areas with stable *P. falciparum* malaria (Breman et al., 2001). These adverse consequences can be prevented through the use of two highly effective prevention interventions, intermittent preventive treatment with sulphadoxine-pyrimethamine (IPTp-SP) and long-lasting insecticide-treated nets (LLINs) (Desai et al, 2007).

As indicated earlier, malaria control experts consider ITNs as key in efforts to control malaria, in fact, one of the most promising interventions to prevent malaria in highly endemic areas, especially ITNs impregnated with parathyroid insecticides (Erlanger et. al, 2004). This assertion ties in with Hill et al. (2006) position that ITNs are the most powerful malaria control tool to be developed since the advent of indoor residual spraying (IRS) and chloroquine in the 1940s. According to these scholars, the potency of ITNs, attracted global attention, culminating its acceptance as an important component of global and national malaria control policies since the mid-1990s (ibid). Lover et al. (2011) argue that a wide range of tools, including strengthening community health systems for prompt and correct treatment of infections, use of fish to control mosquito larvae and presumptive treatment of pregnant women, among others to decrease parasite transmission but, the most cost-effective community strategy has been the use of ITN.

An ITN consists of an untreated net and an insecticide treatment kit. It is very important to re-treat the net regularly with insecticides. Standard specifications exist primarily to protect and benefit users. However, certain qualities are culturally-specific and attempts to standardize all features of ITNs would be inadvisable (CDC, 2019). UNICEF procures a range of these nets in the most popular sizes, shapes and colours. Standards are essential for quality control and UNICEF follows WHO specification for netting materials strictly (ibid).

Besides the incorporation of ITNs into global malaria prevention and control policies, the nets are also becoming increasingly available to vulnerable populations at risk of malaria in view of its potency (Vanden Eng et al., 2010) According to these scholars, the appropriate and constant use of ITNs is essential for preventing malaria but, their use often lags behind ITN ownership (ibid). Therefore, in order to increase ITN use, it is necessary to devise strategies that accurately identify, differentiate and target the reasons for non-use. To fight malaria, a simple technique like ITN can help prevent it by equipping trainees who distribute them with the needed information to be able to empower users to sustain its use. These necessitate studies to further explore appropriate strategies to deal with challenges associated with interventions for malaria control.

Scholars have carried out several studies in Africa, which have established that plain old mosquito netting (treated with insecticide) and have been used on a large scale based on their cost – effectiveness, and has achieved positive results by protecting a large numbers of people (Tweneboah-Koduah et al., 2012).

Effectively, the use of ITNs could save the lives of more children than any other single intervention except breast-feeding and oral rehydration therapy, for instance, at an estimated cost of US \$ 1.20 per person protected per year, ITNs are considered to be one of the most effective health interventions in Ghana (ibid).

Despite evidence demonstrating that the use of ITNs decreases malaria related morbidity and mortality, it is difficult to encourage consistent and appropriate use of bed nets (Sarpei – Nunoo, 2011). De La Cruz (2006), concur with Sarpei –Nunoo, 2011), that estimation from Africa as a whole suggests that only three percent of children less than five years of age sleep under ITNs, and maintains that the situation is a setback in the efforts to control malaria.

This situation is also evidenced in studies in malaria control, confirming that children are uncomfortable in sleeping under bed net for a number of reasons (Sarpei –Nunoo 2011). For example, parents attribute malaria to causes other than mosquitoes and may not attribute bed net usage with the prevention of malaria. More discouraging is the cost of the nets which, some parents may consider too expensive to purchase, in addition to the suspicion of purchasing a bad net, or to treating it with insecticide (ibid). According to Tweneboah-Koduah et al. (2012), users of ITNs in some communities in Ghana, for example, have limited access to the nets, despite increased availability and improved distribution systems besides the challenge of wrong uses and, this affects

the efforts to control malaria. Some parents may consider using bed nets difficult because sleeping under them can be hot and uncomfortable, or they may believe that bed nets resemble burial shrouds or that insecticides used to treat ITNs will harm their children (WHO, 2005).

On the other hand, some community members often value bed nets because they decrease the nuisance associated with mosquitoes, but wrong beliefs of parents/carers and lack of information concerning ITN present another challenge that does not encourage the constant use of bed net especially during the dry season when mosquitoes are less noticeable (Adongo et al., cited in Sarpei – Nunoo, 2011)

These are indications that many other factors also influence users' decisions and malaria prevention behavior which require interrogation to help evolve effective communication strategy to enhance efficient utilization of information for education on the use of ITNs. That may possibly influence the acceptance of the ITNs.

2.1.7 What influence the widespread acceptance and use of ITNs?

So many reasons account for the use of ITNs, notably, access to netting and insecticides re-dipping, affordability, public education, an increase in the knowledge base required to support the design and implementation of national ITNs programs (education) (Sarpei – Nunoo, 2011), The development of public health communication tools and Strategies to support a national ITN programming are equally essential as they improve national, political and policy environment (ibid). But these advantages may often be inhibited by other socio – economic factors that may negatively influence the widely acceptance use of ITNs. For example, community perceptions, beliefs and attitudes about malaria causation, prevention and cure influence efforts to control malaria and, are often overlooked in control efforts and in turn affect the use of ITN (Sarpei – Nunoo, 2011). According to her, the cost and availability of the nets raise further questions in that neither nets nor the insecticides required are widely available or affordable in most countries of Sub-Saharan Africa.

Nkoka et al. (2018) argue that factors such as women's age, parity, education status, employment status, household wealth and religion significantly influence the use of ITN utilization. For instance,

...in Kenya, women who had received a higher level of education were twice as likely to use ITNs as women with no formal education. In Cameroon, 45% of multiparous women reported having slept under an ITN the night before the survey, as compared with 21% of primigravida women. However, inconsistent results have been obtained, with some studies indicating that age, parity, and education have no significant associations with ITN use among pregnant women (2018, p2).

In Ghana, the cost implications associated with ITNs, the level of education of users, employment status of users, marital status, religion and side effects of ITN use are key in determining the use of the nets as effective measures in the prevention of malaria (Konlan et al, 2019). According to these scholars, a study that examined the utilization of ITN among caregivers of children under five years in Ho municipality of Ghana revealed for instance, a connection between caregivers with tertiary level of education and the utilization of ITNs, indicating that Caregivers with tertiary level of education were 53% times less likely to use an ITN as compared to those with no educational background, because highly educated women were likely to engage in activities that helped them to decrease or avoid the risk of being infected by malaria (ibid).

Also, with an increasing perception of the cost involved in the use of the ITN, community members are likely to use the ITN because of the value they place in acquiring one. Caregivers who said ITNs were expensive were 33% times less likely to use an ITN as compared to those who said it was not expensive and the difference was not statistically significant (Konlan et al, 2019, p5).

These are indications that the acceptance and usage of ITNS could be motivated by a myriad of factors, possibly, by socio-economic and political variables within the environment in which the nets are being utilized. Adedokun et al, (2017) and Mezmurs et al. (2017) confirm this possibility, citing that community characteristics exert a strong influence on health outcomes and health care utilization across Africa. Similarly, community factors such as wealth, health status, individual risk exposure and resource access status influence ITN use among those aged under 5 years, as in the case of Rwanda, but, little is known about the effects of community on ITN use among women (Nkoka et al. 2018). Furthermore, Lover et al. (2011) argue that low cost, ease of use, and simplicity of distribution have resulted in the distribution of approximately 250 million nets worldwide in recent years.

The positions of scholars above suggest, that a wide range of factors motivate the widespread use of ITNs, particularly the influence of the environment within which consumers and beneficiaries

are located. This may have resulted in more studies to explore the dynamics of parity of use especially in sub-Saharan as Lover et al. (2011) argue, that such studies have identified a wide range of factors in different environments which also tend to highlight some reasons for low patronage in some environments, particularly in sub-Saharan Africa; “These studies have identified a wide range of factors in different environments; the most common of these include users reporting being too hot under nets, difficulties hanging nets in traditional houses, and not having enough space under nets for all household members” (Bateg, 2002 and Baume, 2009 , cited in Lover et al. (2011).

The implication is that, despite the benefits, ITN use in sub-Saharan Africa is being hampered by some problems that potentially impact on the fight against the malaria disease. Most households in malaria endemic areas do not possess any net, insecticide-treated for several reasons, including superstitions, inadequate education and knowledge about malaria diseases, extreme poverty and , misunderstandings about malaria, thereby lowering incentives to use ITNs (Agyepong, 1992). For example, the Adangbe people in Southern Ghana believe that “asra”, a local disease that resembles malaria, is the result of prolonged exposure to heat so they do not give serious attention of medication to treat victims, especially infants (ibid). Similarly, the people of Bagamoyo District, in Tanzania, blame “degedege”—a local term for fever and convulsions on a bird-spirit instead of cerebral malaria (Makemba et al., 1996). In Western Kenya, ITNs use has equally become largely deficient on the belief that malaria was a multi – causal disease and that ITNs were therefore only partly effective as a malaria preventive and intervention measures (Alaii et al., 2003b).

Also, the challenge of purchase cost and re-treatment, in addition to the common misconception that ITNs are meant to control mosquitoes as opposed to malaria, equally serve as a huge barrier to the use ITNs, especially in low income communities in sub – Saharan Africa ((Arrow et al,2004). According to a WHO/UNICEF survey between 1997 and 2001 in nine African countries, a median 13 percent of households had one or more nets of any kind; a median 1.3 percent of households in three countries owned at least one ITN; and across 28 countries, only 15 percent of children under age 5 were sleeping under any net, indicating that net ownership and use are lowest in poor households, partly due to poverty ((WHO/UNICEF, 2003).

Effectively underscoring the arguments above is the assumption that motivation for the widespread use of ITNs are mixed, irrespective of the environment and, that equally influence the level of

patronage. For instance, a study at Ho in the Volta region of Ghana as indicated earlier also showed that utilization of ITN was low as 41.7% (Konlan et al, 2019), despite the advantages associated with the cost, availability and ease in distribution amongst others. This deficiency may have impact on the fight against the malaria disease for which the importance of bed nets like ITNs in the fight against malaria must be discussed.

2.1.8 The Importance of Bed Nets in the fight against Malaria

According to Egbuche et al. (2013) malaria constitutes over 10 % of Africa's overall disease burden, accounting for 40 % of public health expenditure, 30–50 % of in – patient hospital admissions and up to 50 % of out-patient visits in endemic areas. Arguably, this situation calls for more research to identify causes to enable experts find solutions to that. More research are conducted into malaria prevention and management because the disease is considered a major threat to public health despite continuous efforts by experts to eradicate it to avert its impact on productivity and economy in endemic countries across the globe (Lengeler, 2004). Globally, ITNs have been recognized as an important component of malaria control and elimination strategies, for instance, ITNs have been shown to reduce malaria episodes by 50% and under-five mortality by 17% (Lengeler, 2004; WHO, 2016).

Several studies by health experts on malaria control and prevention across the globe, including Sub-Saharan Africa have demonstrated community-wide benefits of ITNs on malaria-related morbidity and mortality (Hawley, 2003 and Howard, 2000). Although ITNs effectiveness have been endorsed, their acceptance are not without queries in that despite individual and community-wide benefits, ITN use remains below universal coverage (Kanyangarara et al.,2017).

However, the use of bed nets as preventive measure continues to be a relief to users, in terms of dealing with threats malaria pose to public health, as revealed in several studies discussed earlier. For example, Ntonifor and Veyufamb (2016) recommended to the Cameroun government not to relent its efforts in the distribution of bed nets especially to the vulnerable groups in order to eliminate malaria and other mosquito-borne diseases. The recommendation was motivated by findings of a study which revealed that LLINs have significantly reduced the prevalence of malaria among a studied population in PMI Nkwen, Bambui in the Northwestern Region of Cameroun (ibid). Similarly, Sarpei-Nunoo (2011) maintains that ITNs are a powerful public health tool in the fight against malaria in Ghana. According to her, regular use by young children can reduce

their overall risk of mortality by 20% and clinical malaria episodes by 50%. She posits that in the poorest parts of the world, where effective window screening are lacking, insecticide-treated bed nets are arguably the most cost-effective way to prevent malaria transmission, arguing that one bed net can safely last a family for four years (ibid). Besides, child mortality can be reduced when ITNS are effectively used, for instance, large studies of ITNs in the Gambia, Ghana, and Kenya has indicated that the use of this simple technology can reduce the overall child mortality by 17% - 63% (Browne et al., 2001). Similar in Kenya, IDRC and WHO funded study on use of ITNs recorded among other achievements; reduction in deaths from life-threatening malaria by 44%, lowering of the hospitalization of children with malaria by 41%, Reduction of childhood deaths from all causes by 33% (ibid).

The benefits of ITNs to sub-Saharan Africa justify their importance in the malaria control and prevention strategies, in that the overall use of ITNs prevent approximately one in five childhood deaths in the region (Smithuis et al., 2013).

These substantial benefits have rightly led to the inclusion of ITNs as a central component of many malaria control initiatives throughout the world. In endemic areas of South and South-East Asia, where malaria transmission is lower and unstable, mobile young adult males are particularly affected, and vector behaviour is different, the results of ITN efficacy studies are mixed, and much less clear than in Africa (Kamol-Ratanakul, 1992 and Ahmad 2003 cited in Smithuis et al., 2013:2).

Inherent in the benefits of ITNs uses are the affordability and economic advantages associated with them. Studies indicate that the cost of using ITNs for malaria prevention and control is affordable and comparatively cheaper than other means, in that much resources are expended on households purchase prevention items such as mosquito coils, sprays and repellents, and bed nets (with or without insecticide treatment), although these items also are desired for nuisance insect control and not just malaria prevention (Arrow, et al, 2004).

According to Desfontaine et al., (1989);

...expenditures for these items have been studied in a few places, and range, per month, from US\$0.05 per person in rural Malawi (Ettling et al., 1994) to US\$2.10 per person in urban Cameroon (equivalent to a range of US\$0.24 to US\$15 per household), (cited in Arrow et al., 2004)

It is pertinent to note that expenditures on malaria control measure are in most instances dictated by income, social status and environment, especially in endemic areas, as Ettlting et al, (1994) argue. According to them, a study in Malawi indicates that 4 percent of very low-income households spent any money at all on malaria prevention, compared with 16 percent of other households (ibid). Moreover, ITNs can be re-used, and they are expected to be less expensive in the long term than the combined cost of other prevention measures and treatments, including anti-malaria drugs (to which malaria parasites are becoming increasingly resistant), insecticide sprays, coils and other traditional control methods (Sarpei-Nunoo, 2011). In places like Benin and Cote d'Ivoire, users are exploiting economic benefits of ITNs by forming co-operatives which, are sewing and selling insecticide treated nets. This promotes the use of nets, creates employment for women and, and raises their status in the community (ibid).

The implication is that the use of ITNs can be enhanced even beyond the cost and other factors that tend to influence their patronage depending on the efficiency and competence of users in managing the nets. It is possible that the types and the distribution method or mechanism may also influence the potency of ITNs in the fight against malaria.

2.1.9 ITNs – Types and Distribution

Statistics from Centre for Public Impact (CPI) indicate that an estimated 908,000 malaria deaths were averted through ITN coverage between 2000 and 2010, with three-quarters of the deaths averted since 2006 (CPI,2016). The CPI argue that ITNs have evolved over the years, culminating in the development of different types. For instance, by 2006, across sub-Saharan Africa, about one-quarter (26 percent) of households owned at least one mosquito net. By 2010, long-lasting insecticidal nets (LLINs) had become standard, distributed widely for full population coverage, which is regarded as a public good and distributed free to end-users in many countries CPI (ibid).

Amongst the types of mosquito nets are Adventure II treated mosquito Nets, Long lasting Mosquito Net (LLMN) and Treated Mosquito Bed Net (TMBN), and they all come with different net specification based on, for example, type of material, tensile strength of the net, mesh, weight, and type of treatment. All these nets are invaluable for a safe slumber in any rural location with too many mosquitoes, other bugs or even spiders (WHO, 2016). The Organization and the US Centre for Disease Control highly recommended using various netting options to reduce contact with mosquitoes (ibid). Long lasting Insecticidal Nets (LLIN's) have been developed in response

to re-treatment rates of conventional insecticide treated nets, especially in Africa, and they are considered as the preferred choice of mosquito nets for UNICEF support programs because they are a ready to use pre-treated mosquito nets, which required no further treatments during their expected life span (CPI, 2016).

The WHO has therefore endorsed universal access to ITNs, at a ratio of one net per two people (population ratio of 1:1.8), for all 3.2 billion people at risk of malaria worldwide, and this has culminated in the distribution of hundreds of millions of ITNs in malaria-endemic regions through various mechanisms every year (Kreznoski, 2016), including various mechanisms, depending on the environment in which distribution exercises take place;

targeting of particular populations or choosing a mix of public and private distribution venues and physical activities related to transporting and distributing ITNs to individuals, and the demand-side activities include education and behavior change campaigns to promote “net cultures” in malaria susceptible regions, pricing schemes, and interventions to assist in effective use of ITNs (2016, p40).

Effectively, bed nets distribution do not only target at beneficiaries but also, strategically consider other factors which must be dictated by thorough research in most cases to identify genuine and relevant beneficiary communities, with special focus on more endemic malaria areas. Similarly, a study by Sarpei-Nunoo (2011) for instance, indicate that some communities adopt integrated child health campaigns, during which children travel to vaccinating posts where they receive vaccinations and other medicines, as well as the insecticide treated bed nets. Health workers and volunteers use such opportunities to educate children and their families on the use of bed nets, while observers from various agencies and organizations monitor the activities of the campaign and provide support to the health workers and volunteers as needed (ibid). This scenario describes just a few isolated centres, where observers from various agencies and organizations monitor the distribution and other activities of the malaria prevention campaign program.

However, this seems not to be the case in Ghana, in the rural areas where these nets are distributed. My observation is that, in most communities, bed nets are distributed by people with no knowledge on their uses, and, if they do have knowledge, they hardly talk about the health benefits of its usage as they only count the number of people per household and provide them with the net. Majority of the vaccination centres which are normally manned by health workers, are ignored in the distribution chain.

2.1.10 Information Utilization, ITNs and Malaria Control Management

The most essential contribution to alternatives which could counteract the dominant channels of public communication would be learning an alternative use of information as cited in Behrens (1994). Behrens's position becomes relevant in trainees' efforts to utilize information because alternatives provide them with the ability to obtain a wholistic, individual, and independent perspective on ITNs in the course of communication. This becomes more relevant when trainees are familiar with the terrain, in that they would better utilize more knowledge, especially, on socio-cultural and educational and political background which sometimes influence execution of projects in certain communities. For example, in the 'coverage of malaria in pregnancy intervention in sub-Saharan Africa', Hill et al (2015) indicate, researchers considered a systematic examination of the operational, socio-economic, and cultural constraints to pregnant women's access to intermittent preventive treatment (IPTp), long-lasting insecticides-treated nets (LLINs) and case management in Kenya and Mali to provide empirical evidence for strategies to improve coverage.

Undoubtedly, the outcome of this strategy may potentially provide knowledge to guide trainees on the history of their beneficiaries in the malaria intervention program. This gives credence to the fact that in information utilization, knowledge and information literacy is paramount for greater work effectiveness and efficiency, to guarantee the survival of all aspects of knowledge and education on strategies designed to address challenges (ibid).

The study on information management among trainees on ITNs distribution and use as a management and intervention mechanism in the control and management of the malaria disease becomes a typical case for consideration. Similarly, it confirms the idea that efficient utilization of information becomes a valuable information resource critical for decision – making in policy implementation at all levels since it helps to evaluate different possibilities in information utilization (Markgraf, 2019).

The core issue on information utilization is to ensure adequate literacy as basis for consumers of the information. In the case of trainees of ITNs projects, they will have to imbibe key elements of information literacy to be able to interpret and communicate relevant pieces of information for malaria control and, as a way of preventive and intervention strategies to the beneficiary communities. Behrens (1997), quoting Robert Taylor (1994), as cited in "conception of information literacy", notes amongst other elements, that not only is knowledge of the variety of

information resources available (who and where) a requisite of this literacy, but also, that the informing process, which is continual, is as important as the spot information process, in addition to strategies (when and how) of information acquisition in information utilization.

A cursory consideration for these elements, from the arguments above, to a large extent would enhance information utilization in the overall process in the distribution and use of ITNs in the malaria control and intervention strategy. Training for People charge with the noble responsibility of passing on information must strategically include a mechanism to equip trainees with basic knowledge in information utilization.

2.2. REVIEW OF RELATED STUDIES

Rhee et al. (2015) explored ‘the use of ITNs in Piron, Mali, following a malaria education intervention to determined trials in systematic allocation of households. The study was motivated by the concerns that, although ITNs reduce malaria morbidity and mortality, it uses are limited. Besides, a barrier to ITN use may be lack of knowledge regarding malaria transmission and prevention. The study therefore explored ITN use and malaria knowledge levels between households in Piron, within a year. The study adopted a qualitative method approach during which knowledge about malaria and prevention practices was assessed pre and post. (Rhee et al, 2015).

The result was that 49% of households who received the educational component impregnated their nets in comparison to 35% of households who did not. In individual analysis, ITN use was significantly greater in participants who had received the educational intervention (48%) versus individuals who did not (33%). The study revealed that knowledge levels about malaria significantly increased for each individual pre – versus post- educational intervention, although there was no difference found between educational and control groups. The study concluded that it is possible to educate individuals about malaria and to implement net impregnation services with limited resources. Greater accessibility to net-impregnation services, according to the study is necessary but not sufficient to increase ITN use (ibid).

On Insecticide-treated net ownership and utilization and factors that influence their use in Itang, Gambella region, Ethiopia, the country set out declared 2011–2015. This country set out Malaria Prevention and Control Strategic Plan to fight the malaria vector. This was so because the disease

was considered a major public health problem in that country. The Ethiopian health authorities, discovered that most of the studies conducted on the use of ITNs were not in line with the strategic plan of the country (Watiro and Awoke, 2016). Accordingly, a study was conducted to assess ITN ownership and utilization, and within barriers related to ITNs use among the target-area population at household (HH) level. A cross-sectional design was employed in an Ethiopian community of Itang, using trained nurses as field officers to conduct face-to-face interview and observation. A total of 845 participants were selected through multistage sampling, and the size was determined by using a single-population proportion. Findings of the study indicated that, among 845 HHs interviewed, 81.7% (690) had at least one ITN, while 52.3% (361) had used the ITN the night preceding the data-collection day. HH awareness of malaria prevention, number of ITNs, family size, number of family members sharing sleeping area/beds, sleeping patterns of adolescents, HH-head age, and inconvenience of using ITNs were found to be barriers to the use of ITNs in this study. The study concluded that very few HHs owned ITNs and there was very low usage of ITNs. The study recommended that the regional health bureau and district health office should consider bigger nets that can accommodate family members who share the same sleeping area/bed in the area (Watiro and Awoke, 2016).

Thangarajathib (2011) in a study exploring Internet Utilization among B.Ed. Students, among other objectives, set out to identify the internet services utilized by the B.Ed. students, find out the level of Internet Utilization of B.Ed. trainees, and to find the significant difference in internet utilization with respect to their personal, familial and institutional variables. The study according to Thangarajathib (2011) was motivated by overriding concerns that teaching at B.Ed. level mostly concentrates on giving information, which raised doubts about effective utilization of information by trainees (teachers), in view of emerging complexities in communications and media system. The survey method was employed and a sample of 400 B.Ed. students were selected from 5 B.Ed. colleges in Tirunelveli district of India by adopting random sampling technique. The investigator specially constructed and standardized the Internet Utilization scale for the study. It was found that most of the internet services are not utilized properly by the B.Ed. students and the level of Internet utilization of B.Ed. students was average. The study therefore suggested effective utilization of internet for teaching and learning purposes. The outcome of this reveals that information utilization is not only dependent on the internet and that, there could be alternative approach. My study to

some extent, seeks to explore other alternatives to enhance effective utilization of information to deal with challenges associated with ITNs.

Sambah et al (2018) noted that despite HIV testing and counselling (HTC) being recognized as important elements of any effective prevention, detection, care, and management programs across many societies as part of their primary health care package, it was surprising that research evidence on related issues, especially in developing countries like Ghana was sparse. The researchers, therefore, examined the extent of knowledge, attitudes and utilization of HIV testing, and counselling services among trainee nurses of the public nursing and midwifery training colleges in the Central Region of Ghana. The study employed a descriptive cross-sectional design to collect data from 375 nursing and midwifery students, using multistage sampling procedures. Findings, according Sambah et al, showed that students' HTC knowledge was high (85%) whereas attitudes toward HTC were rated positive (95%). However, HTC utilization was low (47%). Further results revealed a statistically significant difference between class level and HTC utilization.

In contrast, no statistically significant differences in student nurses' class level and HTC knowledge were found. Besides, no class level and attitudes toward HTC services were realized in the findings. The study concluded that the low HTC utilization among the student nurses may potentially lead to missing opportunities for early diagnoses, care, treatment, and support services for primary, secondary or tertiary prevention modes. Also, organization of programs by college authorities on the importance of HTC and the need for student nurses to utilize these services was crucial.

Ofori-Dwumfuo and Addo (2012) on Utilization of Information and ICT Resources by Parliamentarians in Ghana sought to assess the utilization of information resources by parliamentarians in Ghana. According to the researchers, the study was informed by concerns to find out parliamentarians' information need and use, what they perceive as information, their reasons for acquiring information, their awareness and extent of usage of information and ICT resources available to them, adequacy and relevance of the information available in the parliament library for their study, as well as their preferred ways of receiving information.

Using the survey method, questionnaires were used to collect data from 115 members of the Ghana parliament, selected from the 230. The study revealed that the library provides relevant information services to the parliamentarians. However, they do not patronize the library as expected, due to

their purported busy schedules. There is therefore the need to employ more research assistants to assist them to access information which they prefer in its original, summarized and analyzed formats. The study also, revealed that some members of parliament lack adequate IT skills and therefore must be given some ICT training to enable them access electronic resources more efficiently. The study therefore, recommended among others that although some information may be required in their original forms, some other forms should be repackaged to suit the exact needs of the legislators to avoid irrelevances.

The studies by Rhee et al,2015; Thangarajathib, 2011; Sambah et al, 2018 and Ofori-Dwumfuo, and Addo (2012, above, present diverse responses in terms of the relationship between the object of my study and other studies as various findings indicate. In most cases, the studies did not address adequately, the issues concerning how information was utilized among various trainees and carriers of messages to be relayed to target groups. For example, although Rhee et al (2015) succeeded in their attempt to unearth the importance or merits in the use of ITN based on the availability of resources, the fact that accessibility was not sufficient to increase ITN use leaves a gap in the study. Especially, the study failed to explore how information was managed by the field officers in their communication with the beneficiary communities. For example, was there any reaction in terms of the nature and information communicated to the communities and, what were the strategies in terms of information management and utilization among the field officers?

However, Ofori-Dwumfuo, and Addo (2012) presented critical issues that to a large extent exposes some gaps in the other studies, particular on the need and uses of information utilization. Relevant questions such as what Parliamentarians perceived as information, their reasons for acquiring information, their awareness and extent of usage of information and ICT resources available to them, adequacy and relevance of the information available in the parliament library for their study, as well as their preferred ways of receiving information were lacking in the other related studies. My study also seek to fill in some of the gaps identified by Ofori-Dwumfuo, and Addo (2012) in the other studies as discussed above. For example, what trainees perceived as information, their reasons for acquiring information, their awareness and extent of usage of information, as well as the adequacy and relevance of the information available to them for educating users of ITNs.

Some of these questions validate the rationale and significance of the quest by this researcher to explore how trainees utilize information among themselves in relation to education of their targets on education and preventive issues on the uses of ITNs to control and contain the malaria disease.

2.3 THEORITICAL FRAMEWORK

This study adopted Wilson's Global Model of Information Behaviour as theoretical framework. The model is one of several theories employed in research concerned with information use and users (Case, 2002). Niedźwiedzka (2003) confirms that Wilson's model is part of Models of Information Behaviour which present in a simplified way the relationships among theoretical propositions and processes connected with identification and satisfying one's information needs. This suggest that Wilson's models is grounded in multi – disciplinary research, especially as a key model to explore information management and, serves as milestones shaping the information behavior research (Potnis,2015), an indication that the model has evolved over the years, 1981, 1996, 1999 (ibid). The models steer the direction of information behavior research from “system-centric” to “person-centric” inquiries by proposing information – seeking behavior as a new lens in combination with information use to study the dynamic process experienced by users for satisfying information needs (Wilson, 2005).

The Wilson's Global Model of Information Behaviour assumes that information needs are secondary needs, caused by primary needs, and that, the rise of a particular need is influenced by the context, which can be the person him or herself, or the role the person plays in work and life, or the environments (social, political, economical, technological, etc. (Niedźwiedzka, 2003)

Niedźwiedzka argues that the model manages information in two phases, through the acquisition of information and information processing and use:

Among the modes of obtaining information Wilson differentiates passive attention, passive search, active search and ongoing search. First mode means passive absorption of information from the environment, for example, when the TV or radio is on, without person's intention to seek information. It is not purposeful information behaviour, although it is an important way of assimilating information. The second mode applies to those occasions when a particular type of behaviour results in acquisition of information that happens to be relevant to the individual. The third, active search, takes place when a person actively seeks out information. The fourth, an ongoing search, means continuing search carried out to update or expand area of information. Information obtained by a user is

then processed, becomes an item of person's knowledge, and is used, directly or indirectly, to influence the environment and, as a consequence, create new information needs (2003:14)

Bawden, (2000) agrees with Potnis (2015 that Wilson's model has evolved, explaining that Wilson's first model was based on an understanding of human information seeking behaviors that are best understood as three interwoven frameworks, thus, the user, the information system, and the information resource. The second model recognized that an information need is not a need in and of itself, but rather one that stems from a previous psychological need. These needs are generated by the interplay of personal habits and political, economic, and technological factors in an individual's environmental. The factors that drive needs can also obstruct an individual's search for information. The third model incorporated several new elements that helped to demonstrate the stages experienced by the 'person in context', or searcher, when looking for information. These included an intermediate stage between the acknowledgement of a need and the initiation of action, a redefining of the barriers he proposed in his second model as "intervening variables" to show that factors can be supportive or preventative a feedback loop, and an "activating mechanism" stage (ibid).

Wilson's model becomes relevant to this study, in view of the key answers that it seeks to derive. This researcher is exploring the nature of information and how it is utilized by trainees, taking cognizance of the beneficiaries' reaction in terms of education literacy and effective uses of ITNs. In effect, the models serve as frameworks for developing and testing combinations of information behavior constructs and their impact on a malaria endemic environments within the Adansi Communities of the Ashanti Region. Thus, the model may facilitate active searching of information through face-to-face communication and passive reception of information where information is received by the person without any intention to act on it.

Effectively, the study touches on human information management and its connection with the models, reflecting Wilson's position that, "the totality of human behavior in relation to sources and channels of information, include both active and passive information-seeking, and information use (2000, p49).

2.4 Conclusion

This chapter discussed the concept of information utilization, malaria prevention, control and various preventive measure as espoused by scholars through research. The discussion revealed the relevance of ITNs as WHO's recommended and reliable preventive measure of controlling the malaria scourge identified as a major public health problem in malaria endemic areas. Effective uses, good quality, the adoption of recommended type and efficient distribution of ITNs proved to be an effective way of controlling malaria, and the fact that some factors, notably socio-economic and cultural ramifications influenced the use ITNs. The impact of malaria was heavy on pregnant women and children, particularly below the age of five, as revealed in the literature. The chapter also established that effective utilization of information was vital and crucial for education on malaria control as evidenced, for example, in the study on the use of ITNs among the educated and uneducated women. The study was among a number of existing literature related to the concepts of malaria control and information utilization for education on malaria, reviewed to provide more information on the concept. Again, discussed in this chapter was Wilson's Global Model of Information Behaviour as the theoretical framework underpinning the study. Wilson's model becomes relevant to this study, in view of the key answers that it seeks to derive by exploring the nature of information and how it is utilized by trainees on ITNs uses in the Adanse area of the Ashanti region, taking cognizance of the beneficiaries' reaction in terms of education literacy and effective uses of the nets. Wilson's models is grounded in multi – disciplinary research, especially as a key model to explore information management and, serves as milestones shaping the information behavior research (Potnis (2015)).

The following chapter (3) discuss the methodology for researching the information utilization, malaria prevention, control and various preventive measures that relate to the study area.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The methodology enabled this study to go through a defined process of collecting information and data, for instance, from publications, interviews, surveys and other research techniques, as well as both present and historical information (Brown, 2006). In effective, the methodology has provided a “framework which is associated with a particular set of paradigmatic assumption that was used to conduct our research” (O’Leary, 2004, p.85).

This chapter accordingly, describes the methods, approaches and designs in detail, highlighting on the study area, data collection techniques and Sources, sampling, population, data analysis method and justification for the approach.

3.1 Methods for the research

The study adopted qualitative methods of enquiry;

a form of social inquiry that tends to adopt a flexible and data-driven research design, to use relatively unstructured data, to emphasize the essential role of subjectivity in the research process, to study a small number of naturally occurring cases in detail, and to use verbal rather than statistical forms of analysis (Hammersley, 2013:12).

In the context of this study, the choice of qualitative approach enabled me to explore information utilization among trainees on Insecticides Treated Nets (ITNs) in the Adansi North District of Ashanti Region, a phenomenon which has become a subject of enquiry, with a view to exploring the rationale behind abuses of their uses. This is an attempt to understand the world from the subjects’ points of view, to unfold the meaning of their experience, as Kyale (1996) argued.

Consequently, the study makes a case of in-depth interviews as argued by Priest (1996), because it provides an opportunity for open-ended conversational exploration of the trainees and health

experts and, a section of beneficiaries of the ITNs project in the area. In that respect, respondents' views and knowledge on the concept of the mosquito project, thus, how they share information on the spread and how to prevent mosquito by sleeping under the nets, the benefits of sleeping under the nets and, the consequences of not sleeping under mosquito nets, amongst others, were explored.

3.2 Study Area

The study was carried out in Nyambekyere, Nyankomasu, Danyase, Adiembra, Asokwa and Fomena, all in the Adansi North District of Ashanti Region of Ghana. The communities are located in mining areas with a population of about 39, 958 with a projection of about 49,522 by 2020 (GSS Web, 2010), most of whom are low income earners that hardly afford the purchase of mosquito nets. The adoption of the program is motivated by this researcher's desire to explore how information is shared among trainees on the ITNs projects by a number NGOs and individuals to complement government's efforts to fight the spread of malaria in those communities.

3.3 Research Design

Research design is the conceptual structure within which research is constructed (Kothari, 2004). This study is guided by a qualitative design, a "blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings" (Burns and Grove, 2003, p195). The design, therefore, provided a framework to facilitate an understanding of the context or settings of the participants through formal and informal interactions, to enable the researcher to personally gather information (Creswell, 2014).

As stated earlier, a qualitative technique was also considered the most appropriate design in providing answers to the phenomenon, since the study involved a lot of activities in the field, notably, dealing with the task of actively observing the activities of trainees and users of ITNs.

The study, accordingly made use of case study, in addition to the use of in – depth interviews, to collect the data. Case studies, according to Thomas (2011), are analyses of an organization that is studied holistically to gain insights into a subject of enquiry or a case. In this context, the use of ITNs in the Adansi North District is considered a phenomenon in that the area has become a subject of enquiry, with a view to exploring the rationale behind the alleged abuses or otherwise of ITNs.

The ITNs study had gone through systematic inquiry, and this reflects in Bromley's (1990:302) as cited in (Zucker, 2009), that, case study is a systematic inquiry into an event or a set of related events which aims to describe and explain the phenomenon of interest. Case study can also be described as detailed examination of series of related events which exhibit the operation of some identified study deliberately general theoretical principles (Gray, 2014).

The FGDs approach was equally beneficial: two focus group discussions of between eight and ten participants were conducted. The rationale for the FGDs was in consonance with Reinard's (2008, p225) suggestion, that group interviewing is a useful technique for getting information about virgin topics. I have observed that the assessment on ITNs use in the Fomena area was entirely a new phenomenon.

The criteria for recruitment of respondents was informed by the expectations of eliciting views from the perspectives of trainees on ITNs, some users of ITNs and health personnel, notably community health nurses. The FGDs was based on both structured and unstructured interview techniques as Myersa and Newman (2007) suggested, that where two or more people are interviewed at once by one or more interviewers, to generate consensus around malaria and ITNs. The outcome of the FGDs helped shape the questions for the interviews.

Sampling techniques were applied, with reference to original research questions and the choice of design, as indicated by Wimmer and Dominic (2008) because they had direct impact on the type of design chosen to guide the study. Effectively, the composition of an appropriate sample of adequate size, in relation to the collection of data and challenges associated with respondents and the subject will depend upon the original research question and the designs chosen (ibid).

Consequently, both Maximum Variation Sampling and Convenience Sampling were adopted. Maximum Variation Sampling was used to capture as wide a range of qualities or phenomena as possible, as normally predicted by certain indicators and established characteristics, such as the popularity, expertise and knowledge of respondents, while Convenience Sampling facilitated the selection of respondents who were easily accessible to this researcher (Creswell, 2014). Similarly, convenience sampling forestalled the hustle of protocol and ethical considerations that would have delayed the research, it equally provided opportunity for this researcher to engage most with interviewees who could talk about ITNs (ibid).

Responses were subjected largely to comprehensive and more analytical discourses from different perspectives on the subject of Information utilization and ITNs uses in order to arrive at credible findings

The design has been occasioned by the desire by this researcher to strategically study the contextual conditions pertaining to complaints of continuous rise in the spread of malaria caused by failure to use the ITNs, especially when the boundaries between the phenomenon and context are not clearly evident and relies on multiple sources of evidence (Yin, 1994).

3.3.1 Data Collection Techniques and Sources

The study utilized data from two main sources for purposes of analysis. These include both primary and secondary sources. Primary data was obtained from in-depth interviews with trainees of the ITNs project. According to Givens (2008), in-depth interviews enable researchers to retain control over the direction and content to be discussed whilst giving the participants the freedom to elaborate or take the interview in new but related direction.

An interview guide containing open-ended questions was used to gather the desired information for the study. The interviews followed questions that were comprehensive enough to fulfil the main task of attracting responses that potentially met the expectations of the research objectives and questions; made meaning of what respondents said (Kvale, 1996). The use of the interview guide was motivated by the complexities associated with words, as Fontana and Frey reminded, that, “the spoken or written word has always a residue of ambiguity, no matter how carefully we word the questions and how carefully we report or code the answer” (2003, p61).

Consequently, the interview guide ensured consistency, clarity and uniformity in the questions for prospective interviewees. The questions to respondents varied, with emphasis on certain responses and questions to elicit specific responses so as to satisfy the expectations of particular expertise reactions from general responses on ITNs.

Secondary data in research are data which have not been collected with a specific research purpose and can be based entirely on documentary or survey data or documented information (Weijun, 2008). The secondary data for the study was obtained from the internet, newspaper reports and annual reports related to the communication strategies of the National Malaria Control Program (NMCP).

3.3.2 Sampling

Purposive sampling techniques has been used for this study. Accordingly, this researcher “purposely” selected people who had an interest in the topic, with the characteristics of their role in the community, knowledgeable in the research topic who, and were willing to respond to the questions, very articulate with communicability and unbiased, to participate in the interviews (Boyce and Neale, 2006). They comprise, some health officials, including Community Health Nurses, Community Health Inspectors and ITNs users in the communities.

3.3.3 Population

Zikmund and Babin (2013) define a population as a collection of units aimed to be investigated by the research effort. In this study, the population consists of the ITNs trainees, and a section of ITNs beneficiaries and some health experts, as indicated earlier.

3.3.4 Sample size and study population

The sample size of the population is 15, consisting of 5 trainees out of 8 on the ITN project in the Adansi North District, mainly with a diploma as minimum qualification, preferably, with a science or nursing backgrounds and proficient in twi and the english languages. It also included two community health experts, and 8 user beneficiaries from the communities under study also participated based on their background as beneficiaries and knowledgeable in malaria prevention and control.

3.3.5 Data Analysis Method

Data analysis was done along the themes of the five objectives of the project listed in chapter one. Being a qualitative study, data gathered from the interviews was analyzed qualitatively through categorization of emerging themes from the interviews.

Categorization is the process of characterizing the meaning of a unit of data with respect to certain generic properties (Lindlof and Taylor, 2002, cited in Chesebro and Deborah, 2007). As in a qualitative study, this researcher realize a need to categorize after a rich data set has begun to build

up. In this study, the interview transcript was analyzed, categorized and the various emerging themes discussed. This procedure was in consonance with Braun and Clarke's (2006) Six Steps of approach to Thematic Analysis, thus, for me to familiarize myself with the available data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

3.4 Justification for Approach

Case study assisted this researcher to explore the intricacies of a phenomenon into more details. The case study approach enabled this study to effectively study the communication strategies adopted by trainees in providing ITNs. The general characteristics that make the case study method suitable were, the fact that it helped to generate an in-depth understanding of a complex issue in its real – life context, Besides, it was relevant because I had little/no possibility to control the situation, plus, the fact that the case study allowed me to use different methods including observations and interviews (Gray, 2014).

The method is particularly useful for getting the story behind participant's experiences, thus, it has the advantage of exploring individual experiences and perceptions especially on sensitive topics, oblivious of the disadvantage among others, of concerns about fear or possibility of myths attached to the malaria disease, as well as the danger of imposing researcher agenda & eliciting artificial responses (ibid, 2014).

Unlike a survey questionnaire, the in-depth interview does not have a rigidly set structure as in the case of the structured and semi-structured interviews. Wimmer and Dominick (2006) confirm this, indicating that the in-depth interviews have the advantage of providing wealth of detail information on even sensitive issues (p. 135).

Creswell (2014) argue that a successful research methodology should depend not only on the appropriateness of the method, in terms of achieving its objectives, but also ensure that it is made possible to replicate the methodology used in other researches of the same nature. Hence the adoption of multiple qualitative techniques, to ensure accurate assessment of information on the study (Wimmer, and Dominick, 2006).

3.5 Conclusion

This chapter discussed the methods, approaches and designs for the study, with emphasis on the study area, data collection techniques and Sources, sampling, population, data analysis method and justification for the approach. The methodology provided a framework or plan to guide the study. It discussion established that the study adopted qualitative methods of enquiry, because of their flexibility, to facilitate the exploration of information utilization among trainees on Insecticides Treated Nets (ITNs) in the Adansi North District of Ashanti Region, a phenomenon which has become a subject of enquiry, with a view to exploring the rationale behind abuses of their uses. Specifically, the chapter discussed the case study approach, spelling out the sampling, population, sources of data and mode of collection of data through and focus group discussions and in – depth interviews. It was clear in the chapter that, the thematic analysis techniques was suitable for the study, as it has the benefits to among others, simplify the analysis for the data. The discussion also established the adoption of Maximum Variation and Convenience Sampling methods on the basis that it enabled the researcher to purposely get the suitable respondents for the study, taking cognisance of certain indicators and established characteristics, such as the popularity, expertise and knowledge of respondents. The chapter justified the adoption of the methodology based on Creswell’s (2014) argument that a successful research methodology should depend not only on the appropriateness of the method, in terms of achieving its objectives, but also ensure that it is made possible to replicate the methodology used in other researches of the same nature.

The next chapter explores the data collection methods and discuss findings of the data.

CHAPTER FOUR

DISCUSSION OF FINDINGS

4.0 Introduction

This chapter focuses on the findings of the study generated from both primary and secondary data. The data are the results of interviews with trainees, notably health officials and a section of community members, as well as, articles, books, journals, and other relevant literature on the topic, including malaria, ITNs etc.

The findings are presented by means of analysis, with references to the objectives, and research questions under themes, and are validated with the extant literature as discussed in Chapter Two. This subsequently facilitates effective comparison between the findings of the study and the extant literature on the issues under consideration.

The chapter, therefore, contains methods used for the data collection and analysis and, discussion of the findings

4.1 Data Collection Methods

Data collection refers to the gathering of set of observations about variables using the two main types of data which are primary and secondary data (Gray, 2014). In the context of this study, primary data was used, through in-depth interviews, in view of their advantages as discussed in the methodology in chapter three. It was later interpreted and analyzed.

The interpretation of data represented the application of deductive and inductive logic to the research (Wimmer and Dominick (2006). To ensure logical completeness and consistency of response, the data was consistently edited to ensure accuracy in terms of responses to how trainees on the ITNs at Fomena make use of information management and dissemination in their dealing with the beneficiary communities.

The data was analyzed under five thematic areas with references to the research objectives and questions as indicated in chapter one. Being a qualitative study, the data gathered from the interviews was analyzed qualitatively through categorization of themes generated from the

interviews. Lindlof & Taylor (2002) defined categorization as the process of characterizing the meaning of a unit of data with respect to certain generic properties, and in a qualitative study, like this one, researchers usually consider the need to categorize the responses after a rich data set has begun to build up. Consequently, the data, thus, the interview transcripts, were analyzed, categorized, and the various emerging themes discussed. This procedure was in consonance with Braun and Clarke's (2006) Six Steps of approach to Thematic Analysis which requires a researcher to familiarize with your data, generate initial codes, search for themes, review themes, define and name themes as well as producing a report.

The transcripts were first checked and reviewed by this researcher, to get an overview of the themes after which data from each respondent were coded for consideration separately, using a combination of pre-defined themes based on the original research questions and themes that emerged from the data after thorough review of the transcripts.

The pre-defined and emerging themes were then compared to explore similarities and differences in terms of responses. This helped me to refine the themes into main and sub-themes. These processes did not only facilitate in identifying, analyzing and reporting patterns within the data to ensure flexibility, but also, complemented theories underpinning the study to allow for rich, detailed and complex description of the data (Braun and Clarke (2006. p. 79). Eventually, the following themes were settled on for discussion;

Theme 1. Understanding and appreciation of malaria: causes and prevention.

Theme 2. ITNs, malaria prevention and control

Theme 3. Information Sharing Strategy among Trainees

Theme 4: Information utilization, ITNs and impact on Beneficiaries

Theme 5. Uses of ITNs among beneficiaries

4.2 Findings and Discussion

As indicated earlier the choice of respondents and participants of this study were informed by the nature of the research questions and the statement of problem, also indicated in chapter one. These formed the basis to explore ‘information utilization among trainees on ITNs project in the Adansi area within the Fomena district in the Ashanti Region.

The findings are derived from the responses from the in – depth interviews with respondents, whose views are considered crucial for the outcome of the study, particularly their knowledge in the use of ITNs and malaria control and prevention. They comprised health officials, such as nurses, and community health officials. The views of some opinion leaders and users of ITNs in the study area were equally elicited to complement the health officials’ responses, in an attempt to validate the findings. The responses are discussed below under five thematic areas:

4.2.1 Theme 1. Understanding and appreciation of malaria: causes and prevention.

Eliciting the views of respondents or probing into the concept of malaria, especially from the beneficiary communities was very appropriate judging from their level of understanding and knowledge of the ITNs and malaria prevention and control. This theme becomes more relevant, in view of superstitious beliefs, as these make a section of the communities more vulnerable to the appreciation of unclean environment and mosquito bites as major causes of malaria as against curses from deities.

Findings indicted that respondents were unanimous that malaria is a disease that have adverse effects on society and, can even cause death, but they were divided to some extent regarding the causes. Whilst trainees and some beneficiaries, especially the educated ones agreed that malaria was caused by mosquito bites and therefore the need to have clean environment as preventive and control measures, others maintained that people got infected with malaria because of disobedience to some deities in the communities. For example, Maame Akua Apeadu (Adiembra, 12/5/2020), a beneficiary of ITN, told this researcher that she and her husband had to spend a fortune on rituals in Adiembra, one of the communities, to avert the death of their third child to a ‘strange disease’. Later investigations revealed that the ‘strange disease’ was malaria. For, Opanyin Kwame Agyei (Tewobaabi, 4/6/2020), a teacher, “prompt visits to the hospital whenever he detected malaria symptoms has saved his family from deaths”. According to him he has enough education on

malaria as a disease caused by mosquito bites, and the best to keep mosquitos at bay is to ensure avoid weedy and unhygienic environments. Samuel Owusu Ansah, (Asokwa, 2/3/2020), a nurse and member of the trainee team's response brought out a clear distinction, in terms of the understanding of the malaria disease between the educated and the uneducated. In an answer to a follow-up question on communities' level of education and appreciation of malaria, **Owusu – Ansah** explain that “there is the need to convince most of the illiterates in the communities, superstitions are creating misconception and understanding of malaria as a disease which is preventable and treated by medicine” (Asokwa, 2/3/2020).

The responses above largely confirm that success in the control and prevention of malaria could be based on users' understanding or knowledge acquired about the disease as Kanyangarara et al, posit;

Several studies assessing the distribution of malaria knowledge in sub-Saharan Africa demonstrated inconsistent levels of malaria knowledge and indicated that misconceptions concerning the etiology and prevention of malaria still exist (2018, p2)

This revelation agrees with the argument by Hill et al's (2015) on the *coverage of malaria in pregnancy intervention in sub-Saharan Africa*. The findings of their study attest to the fact that the success of malaria preventive strategies, were based on considerations to communities' understanding of the disease, notably, operational, socio-economic, and cultural constraints to pregnant women's access to intermittent preventive treatment (IPTp), long-lasting insecticides-treated nets (LLINs) and case management of the malaria disease. Similar, the responses of the interviewees are in consonant with Kolan et al's (2019) observation that the level of knowledge and understanding of the people of the efficacy of a particular intervention has an influence on the way they manage a disease like malaria.

On this theme, although some respondents entertain the erroneous belief that some deaths, especially involving children were the results of some 'sins' committed by their ancestors against the gods of the area, findings indicated that they were convinced that malaria was preventable, and that the communities needed more education not only on preventive and control measures, but also strenuous efforts must be invested in education to demystify superstitions associated with the causes of the disease. Acquisition of knowledge on environmental cleanliness was identified by most of the respondents, especially the trainees of ITNs as a key concern that should attract the

attention of communities in mosquito endemic areas, like the Fomena, to complement the use of mosquito nets to ensure success in the fight against malaria. As expected, environmental cleanliness formed a core item on the information sharing and dissemination strategy among the trainees. Nana Eku (Adiembra, 20/04/2020), Odikro of Adiembra describe disrespect for clean environment and misuse of ITNs by a section of the community as ‘irresponsible behaviour’, suggesting, that adversely defeated efforts at preventing malaria. For example, Jessica Amankwa (Danyase, 10/4/2020), ITN trainee and Judith Amo (Asokwa, 10/2/1020), a Public Health Nurse, did not understand why some communities could use ITNs to fence their gardens, they described this act as irresponsible attitude and lack of knowledge and understanding for the use of the nets. The reaction of the two respondents find space in Panter-Brick et al’s (2006) argument that;

...existing theories of health behaviour change, high levels of knowledge about the causation, transmission, prevention and treatment of malaria may facilitate changes in attitude, resulting in the adoption of positive preventive practices that reduce the risk of exposure to malaria and contribute to decreased malaria transmission (in Kanyangarara et al, 2018, p2)

The concerns above make knowledge and understanding of the use of nets very relevant in information utilization strategy of ITNs training programs. This further reinforces the need for appreciation of the malaria transmission challenges, to facilitate efforts in controlling the transmission of the disease. However, how to prevent malaria infection, especially through the maintenance of good hygiene and clean environment to avoid mosquito bites became another issue that attracted interesting responses from both trainees and community members, in fact, findings indicate that both agreed that using ITNs could help in the fight against malaria as discussed below.

4.2.2 Theme 2. ITNs, malaria prevention and control

As indicated, preventing malaria transmission, particularly, by maintaining good hygiene and clean environment to prevent mosquito bites became another issue that attracted interesting responses from both trainees and communities. This issue has been one of the major expectations of the Ghana Health Service (GHS), under the Ghana’s National Malaria Control Program (NMCP), since its introduction to, amongst others, improve malaria prevention by increasing the use of Insecticide Treated Mosquito (ITMs) by children and pregnant women, improved drainage, mosquito-proofing of houses and general sanitation and, reduction of mosquito population through in-door residual spraying and larviciding (GHS, 2017).

Interaction with respondents, especially trainees confirmed the GHS's expectations, thus, the desire to promote multiple prevention by including the promotion of treated bed nets usage and environmental management, as confirmed by the findings of this study. For example, Judith Yaa Oforiwaa (Fomena, 4/4/2020), a community health nurse explained that emphasis on the use ITNs has been the main focus of education in nurses' engagements with the community, in addition to maintaining good sanitation and ridding the environments of weeds. Owusu Ansah, (Asokwa, 2/3/2020) and Opanyin Kwame Agyei's (Tewobaabi, 4/6/2020) response summed the concerns of the communities on the use of ITNs as potential device to overcome the challenges associated with malaria infections in the community, if users are educated properly on the use of the nets. These concerns confirm my observation regarding the use of ITNs as one of the methods for the prevention and control of malaria infection in the user communities.

As a native of Adiembra I am familiar with some of the communities under study, I observe I have an idea of the way ITNs are handled, so it became necessary to explore the rationale behind how the nets were being used. I observed that, besides ITNs being used to prevent mosquito bites, some individuals were also using them as fence walls to protect their farms and backyard gardens from being destroyed by animals, particularly goats and sheep. Others used it to cover plants after their nursing stages. Although interviews responses, mostly ITNs users, varied in words and expressions, which sought to justify how and why they used the nets in that manner, all their responses confirmed my observations in terms of misuse and abuse of the nets as findings showed, for example, that;

...we were using bamboo for fencing but it became difficult getting the bamboo so we resulted to the use of ITNs. We realized that the animals, especially sheep, are unable to jump over the net to destroy our crops (Maame Yaa Dede, Nyankomasu, 4/4/2020)

Me and my family have never slept under any of the mosquito nets supplied by the government and other people, instead we used them as fence because you will have no problem with animals (Kofi Duku, Nyamebikyere, 3/6/2020).

The quotations above resonated in a number responses, particularly the ITN users in most of the communities, a confirmation that most of the users were not sleeping on beds in their rooms. This suggests that lack of knowledge and recognition for the use ITNs may impede efforts of preventing and controlling malaria infections within the communities. It also establishes the concerns as to

whether trainees are being effective in the education on ITNs, as asserted by James Ofei, an ITN user, that,

...they don't teach any available means to use it. We meet trainees under the trees. We join a long queue. Sometimes people get tired and go back home without collecting. It's not always that they bring the net at your house (Adiembra, 18/6/2020)

The revelation above is in consonance with Rhee et al's (2015) position, that a barrier to ITN use may be lack of knowledge regarding malaria transmission and prevention, suggesting that any attempt to misinform a malaria endemic community would further compound the problems associated with the diseases. This assertion is confirmed by some trainees, an indication that there should be a review of approach towards education on the uses of ITNs. In the opinion of trainee health officer Justice Okley (20/6/2020), there was the need for more demonstrations as much has not been put into the information for users, in that the usual way of trainees going to their homes just to mark them for net was not effective enough. This is an indication that the trainees needed more engagement with the communities on the relevance of ITNs for malaria prevention and control.

The issue of comfortability, in terms of the use of ITNs was one of the findings, and also resonated in the responses of most interviewees, especially users of the nets. They complained that using the nets created a lot of discomfort. Janet Oduman's responses gave credence to this assertion. According to her "using it is so difficult for me because of the rashes it gives me. So, I do not use it at all" (Danyanse, 13/6/2020)

The responses above further created doubts pertaining to the success of ITNs in strategic terms, as findings suggested. The deduction is that communities needed comprehensive education on the impact of ITNs as a very effective strategy to deal with the malaria menace. Most trainees agree on these concerns expressed by users, but, thought 'there is a breakthrough,' those concerns notwithstanding, based on positive reactions from a section of the communities. According to Madam Jessica Amankwa, a senior member of ITN trainee who's also a senior health officer at the Asokwa Health Centre;

...their attitude undermined the efforts the government and other benevolent organizations are putting in place to help reduce malaria, especially in this area. Malaria is still the highest case recorded here

despite the distribution of the nets, and this could only be attributed to the fact that the net is not being put to a proper use (10/4/2020).

The arguments above, also, raised a lot of concerns that attracted this researcher's, attention to probe the strategy, in terms of information sharing among the trainees as this also has an influence on the malarial infections prevention and control in the communities.

4.2.3 Theme 3: Information sharing strategy Among Trainees

The arguments above, on 'ITNs, malaria prevention and control', under the second theme provoked a probe into the information sharing strategy of the ITNs amongst the trainees. This was to elicit information on the impact of the nets on malaria infections prevention and control, and, a revelation from the study, that the impact of effective learning on acquisition of knowledge may be dependent on the quality of information that relates to the subject matter under study. Therefore, this researcher was motivated to explore the type and sources of information, the channels or mode of dissemination and how it is shared among trainees to ensure effective utilization. The views of beneficiary communities were also sought on the information they obtained from the trainees to enable the study assess its impact on them.

The trainees, mostly community health nurses and members of the village health committee, considered information on ITNs as an important component of malaria prevention and control program. They indicated that all the information for education on ITNs were sourced from Ghana Health Service under the NMCP, notably on causes and prevention of malaria through maintenance of healthy environment, the use of ITNs, symptoms and the need report to recognised health facilities for treatment (NMCP, 2017). As argued by Owusu Ansah, that ;

The key information from our sources is knowledge on the use of ITNs and their relevance in the prevention and control of malaria infections. We are also equipped with education on malaria, how it can be managed and prevented through the traditional way of maintaining good sanitation and clean environment, in addition to the use of ITNs and early report of symptoms at health facilities. This forms our main message for the users of ITNs in the beneficiary communities, and it is shared effectively among trainees (Asokwa, 2/3/2020)

The quotation above summed up the focus of education and orientation trainees go through, in addition to sharing knowledge on proper uses and value of ITNs, amongst others. Besides training

worshops and seminars which served as key rallying points for training programs, trainees also maximised the use of WhatsApp and SMS in sharing information among themselves. This finds space in Xenos and Moy's (2007) argument that the use of social media, including WhatsApp facilitate information sharing and dissemination in view of their benefits of creating space for dialogue, interactivity, and providing instant feedback, in addition to the advantage of affordability. According to them, they (trainees) also share information on effective organization and sensitization about mass distribution of bed nets, nets distribution recording processes as well as marking out beneficiary areas, amongst others.

...for example there are trainees for household projects and those for schools dubbed 'one child one net project'. There there are three people in each team where they are given their destination point, they are encouraged to share every available information as far as location mapping and distribution procedures are concern (Judith Amo, Fomena, 10/03/2020).

The explanation by Judith Amo, who is also a senior community health nurse, in response to the information sharing strategy pertaining to one of the ITNs project in the study area confirmed to some extent, the finding that trainees were assigned specific duties, and possibly given specific training roles accordingly. It also finds space in Behrens (1994) argument that trainees are equipped with techniques and skills for utilizing the wide range of information tools as well as primary sources in moulding information solutions to their problems associated with their roles in terms of information utilization.

The trainees were emphatic that the orientation created platforms for them to probe into possible questions and challenges they were likely to face on the field and interacted with colleagues through whatsapp platforms. This finding suggests that trainees go through demonstration and adopt channels of communication, with reference to running promotions and languages or local dialect that is familiar or spoken by ITNs beneficiary communities for communication and information sharing. These findings are in tandem with Watiro and Awoke's (2016) observation that, such mode of information sharing, potentially provide appropriate evidence linked to ITN use, and facilitate efforts to design appropriate prevention and control strategies for communities. In their opinion such a strategy potentially contribute to national malaria-prevention and control policy development. Such responses from the trainees suggest that such information sharing strategy was meant to re-emphasise information on ITNs education through information centres in the villages.

However, a crucial challenge as expressed by a number of beneficiaries is that in most cases dissemination of information through the village information centres came unannounced, although both trainees and beneficiaries were unanimous that centres were very effective channels of communication for the projects. The beneficiaries suggested that any vital information on ITNs for the communities must be strategically done on days that communities do not farm. By this, information entities identified in information sharing were being used in the work situation (Bhatt, 2015). For example, some ITNs beneficiary from Adiembra, a farming community suggested that Tuesdays are the best to run adverts because customarily the community was banned from farming on that day, implying that trainees' efforts of disseminating information will be very useful and effective on Tuesdays. Arguably, trainees must factor these arrangements in their information sharing strategy. The reactions of the ITNs beneficiary concerning information dissemination therefore raise questions regarding the impact of ITNs information utilization on the users of the malaria prevention and control measures.

4.2.4 Theme 4. Information utilization, ITNs and impact on Beneficiaries

As indicated earlier, reactions of the users of ITNs concerning the nature of information received from the trainees necessitated discussions on ITNs and their impact on the beneficiaries. This enabled the study to assess how effective and efficient trainees managed and utilized information on education and knowledge sharing in the malaria prevention and control projects.

Findings indicate that respondents, notably the trainees were very articulate on how they managed information on ITNs, concerning its impact on the beneficiaries, but reactions from users required that more efforts should be put into their information utilization strategy to ensure success of ITNs programs. According to the trainees, their strategy was to manage information, to the extent that their operations would meet the expectations of Ghana's malaria prevention and control objectives, under the NMCP. For example, the goal of malaria control in the Second National Strategic Plan (2008-2015) was to reduce morbidity and mortality by 75% by 2015 (GHS, 2013).

... strategically we had to communicate with passion the fact that malaria was having a toll on the Ghanaian populace, especially pregnant women and children, and the only solution was to make very good use of our knowledge in malaria control and prevention by encouraging them to embrace the ITNs project. So we keep updating beneficiaries with figures on malaria infections and their impact on the nation (Adwoa Apau, Adiembra, 18/06/2020).

I observed that trainees also used information to sensitize school children on the impact of ITNs in the prevention of malaria, based on a response from Afia Abu Bonsrah (Fomena, 10/06/2020) a trainee. According to her, trainees also shared leaflets which contained pictorial information on basic education on malaria and ITNs and, this was distributed to children in basic schools and sometimes at funeral and church venues in the communities. For her, such information was to complement the oral information given to users whom were illiterates. However, it was revealed through interviews with some beneficiaries that some children were abusing the use of the ITNs, suggesting that the information on children was not being beneficial. For example,

it appears some of the nets end up being used as goalpost nets at some playing grounds in the villages, in addition to being used as fence walls to ward off domestic animals like sheep and goat from destroying our crops in our backyard gardens and, this calls for behavioural change among children and parents (Maame Akua Apeadu, 12/05/2020)

Responses on the above challenges from trainees suggested that children were, considered as vulnerable to malaria infection also formed a target of education, because children constituted a huge population when it came to issues of ITNs abuse and misuse. For example, Owusu Ansah (Fomena, 02/03/2020), argued that the abuse of ITNs rather served notice on the need for trainees to intensify education on sensitizing children on the value and influence of ITNs on malaria prevention and control towards achieving the NMCP objectives. For example, objectives for malaria prevention as 2015 was amongst others to ensure that;

...100% of households will own at least one Insecticide Treated Net (ITN), 80% of the general population will sleep under ITNs, increase the number of children under-five and pregnant women sleeping under treated net from current levels to 85%, 100% (all) pregnant women shall be on appropriate Intermittent Preventive Treatment (IPT)(Receive at least two or more doses of sulphadoxine-pyrimethamine under DOTS) and 90% of all structures in targeted districts (GHS, 2013 in Awine et al, 2017, p24).

For Judith Amo (10/6/2020), trainees' schedule to receive sites for ITNs projects, for example mapping, registration and distribution of malaria prevention items enable them to acquire very useful information that facilitate the malaria control education projects. She argues that such information is utilized effectively in that it helped them to identify beneficiaries, in terms of status, level education, language. Opanyin Kwame Agyei (04/06/2020) seemed to corroborate the positions of the trainees, responding that the initial visit by trainees enable them to strategise for

the malaria prevention programs, for example, they make good use of the initial assessment of our communities by identifying the right communication channel for the dissemination of information,

The above argument established the finding that the focus of the trainees in terms information dissemination and education on ITNs uses was aligned to the objectives and expectations of the project, to ensure effective utilization of available information to enhance the success of malaria control and prevention. This confirms Kenneth et al., 2004 argument that trainees within the ITNs setup on the malaria control programs acquire communication skills and imbibe basic knowledge as skilled workers in a professional work environment, through which they are expected to pass on information efficiently to communities in the mosquito endemic areas. Similarly, the arguments suggest that trainees felt obliged to make good use of the information on ITNs by ensuring that messages on education are cogent enough to enable beneficiaries of ITNs acquire adequate knowledge to avoid abuse and misuse of ITNs. This assertion finds space in Reill's (1998) recommendations that agents of information utilization need to evaluate the information, by organizing the information so that the information could be effectively utilized to address the problems or issue at hand.

The extent to which users imbibed knowledge and how they applied them may also be used to validate the success or failure of trainees in their education towards the impartation of knowledge on the use of ITNs.

4.2.5 Theme 5. Uses of ITNs among beneficiaries

Findings emanating from this theme helped the study to determine the extent to which users imbibed knowledge and how it influenced their understanding on the use of ITNs. Similarly, the information from the respondents also helped to evaluate the impact of ITNs on the users.

Findings revealed that not only did some members of the community abuse the nets, but they also seemed not to be interested in the nets, although they agreed that sleeping under ITNs was the best way to preventing mosquito bites which cause malaria. For example, while some community members indulged in the practice of using the treated nets to protect their backyard gardens against domestic animals, others, notably the youth, used them as nets around goal post. .

We were using bamboo for fencing but it became difficult getting the bamboo so we resulted to the use of TIN. We realised that the animals ,

especially sheep, are unable to jump over the net to destroy our crops (Janet Oduma, Danyase, 13/06/2020).

I have never slept under any of the mosquito nets supplied. Instead I used them as fence because you will have no problem with animals, also using it is so difficult for me because of the rashes it gives me. So I don't use it at all (Janet Akosua Dede, Nyamebekyere, 13/06/2020)

Some of us find it difficult using it especially when u have no sleeping bed in your room. Also there don't teach any available means to use it. We meet trainees under the train. We join a long queue. Sometimes people get tired and go back home without collect. It's not always that they bring the net at your house (Kwaku Adum, Nyankomasu, 10/06/2020)

I have been informed that a lot of the net is available at the Fomena health centre. So anybody could just go in for some and misuse it. Some join them together for a large scale fencing. I think the health facility should ensure some sanity in the distribution of the net (Nana Eku, Adiembra, 20/4/2020).

The responses above do not only highlight how some members of the communities used ITNs, but they also indicate the extent of abuse and misuse of the facility, thereby militating against efforts by the government and NGOs in the fight against malaria infections in the communities. The findings, as revealed in the responses by the users, also suggest that there were challenges regarding the uses of ITNs by a section of the communities, and these challenges potentially had adverse effects on the malaria prevention and control initiatives. It is also suggestive of the fact that education, information dissemination and distribution of ITNs, were not managed effectively, for example, judging from Nana Eku's response and his suggestion to the health facility to ensure some sanity in the distribution of the nets to the communities.

These responses find space in that argument that in Ghana, for example, the use of ITNs are determined by socio-economic factors, including the level of education of users, employment status of users, marital status, religion and side effects of ITN as effective measures in the prevention of malaria (Konlan et al, 2019). Similarly, most households in malaria endemic areas do not possess any net, insecticide-treated for several reasons, including superstitions, inadequate education and knowledge about malaria diseases, extreme poverty and, misunderstandings about malaria, thereby lowering incentives to use ITNs (Agyepong, 1992).

These also connect with the concern of the trainees, for example, the argument by Jessica Amankwa's (10/02/2020), a senior member of trainees and a senior health nurse at the Asokwa health centre that, the attitude of some of the communities undermine the efforts the government and other benevolent organizations were putting in place to help reduce malaria, especially in the endemic communities.

As indicated by (Kwame Amofo, Fomena, 07/07/2020) a senior trainee officer, "there was the need for more education, particularly, the need to teach users how ITNs are used, the relevance of ITNs through demonstrations to enable the users recognise the importance of ITNs projects in the fight against malaria in the country".

However, despite these challenges as indicated in the quotations, the study established, per responses from interviewees that, the beneficiary communities have embraced ITNs as a malaria prevention and control measure, but it requires intensive education, especially on how the nets are used to enable them to recognise the value of the nets.

4.3 Conclusion

The chapter discussed the findings resulting from both primary and secondary data collected for the study. The data comprise responses of interviews with trainees, notably health officials and a section of community members, as well as, references from articles, books, journals, and other relevant literature on the topic, including malaria, ITNs etc. The findings were presented by means of analysis, with references to the objectives, and research questions under themes, and are validated with the extant literature as discussed in Chapter Two. This subsequently facilitated effective comparison between the findings of the study and the extant literature on the issues under consideration.

Also discussed in the chapter were methods used to analyse the data. the discussion established that the interpretation of data represented the application of deductive and inductive logic, and to ensure logical completeness and consistency of response, the data was consistently edited to ensure accuracy in terms of responses as indicated in chapter one. As in qualitative study, the data was analyzed qualitatively through categorization of themes generated from the interviews, in consonance with Lindlof & Taylor's (2002) definition of categorization. The categorization procedure was also in with Braun and Clarke's (2006) Six Steps of approach to Thematic Analysis

which requires a researcher to familiarize with your data, generate initial codes, search for themes, review themes, define and name themes as well as producing a report. The Eventually, the five themes; Understanding and Appreciation of Malaria (causes and prevention), ITNs, malaria prevention and control, Information Sharing Strategy Among Trainees, Information utilization, ITNs and impact on Beneficiaries, and Uses of ITNs among beneficiaries settled on for discussion. The next chapter concludes on the study.

CHAPTER 5

CONCLUSION

5.0 Introduction

This chapter attempts to conclude the study by giving an overview of the major findings. The findings were discussed in the context of themes in relation to the research objectives and questions.

5.1 Overview of Major Findings

The study has raised several issues covering information utilization, ITNs, malaria control and prevention measures relating to malaria endemic communities in Adansi district of the Ashanti Region. The issues were revealed as the study sought to explore how trainees utilize information meant to educate communities on the use of ITNs, especially the role of trainees in providing information to the communities, comprising Fomena, Adiembra, Danyaase, Nyamebekyere, Nyankomasu and Asokwa, all of Adansi.

The qualitative research methodology (as discussed in chapter 3) was deployed, through which in – depth interview technique was used to elicit information from specific targets, including ITNs trainees, most of whom were healthcare officials and users of ITNs in the six communities mentioned above. The responses were categorized into five thematic areas (as discussed in chapter 4) taken cognisance of their relationship with the research objectives and questions, in tandem with Braun and Clarke’s (2006) Six Steps of approach to thematic analysis.

The findings are summarised under the themes, as follows;

5.1.1 Understanding and appreciation of malaria: causes and prevention.

Malaria infections attracted the need for the study, of which ITNs are affirmed as one of the key prevention and control measures. It was therefore expedient for the study to elicit respondents’ knowledge about the disease, particularly the causes and how to prevent the infection. Under this theme, the study confirmed that;

1. Although the communities knew about malaria based on the understanding that, it is a disease caused by mosquito bites and poor sanitary conditions, however, respondents were divided to some extent, due to the belief in superstitions concerning the symptoms. This situation made a section of the communities more vulnerable to the disease which they agreed could even cause death, because they did not believe the scientific basis for the causes of malaria.
2. That, not only did some members of the community abuse the nets, but they also seemed not to be interested in the nets for several reasons (eg. too hot and uncomfortable sleeping in the nets), although they agreed that sleeping under ITNs was the best way for preventing mosquito bites which cause malaria.
3. That, the success in the control and prevention of malaria may be based on users' understanding or knowledge acquired about the disease

5.1.2 ITNs, Malaria Prevention and Control

On the above theme, findings tied in with the GHS's aim of promoting multiple prevention of malaria by including the promotion of treated bed nets usage and environmental management. Responses suggest that;

1. lack of knowledge and recognition for the use ITNs may impede efforts of preventing and controlling malaria infections within the communities.
2. Communities needed comprehensive education on the impact of ITNs as a very effective strategy to deal with the malaria menace.
3. There should be a review of approach towards education on the uses of ITNs.

5.1.3 Information Sharing Strategy Among Trainees

This theme sought to explore the nature and sources of information, as well as the strategy used for sharing information among trainees to ensure effective utilization. Responses from beneficiary communities, in terms of assimilation of messages from the trainees helped to assess the impact of information sharing and dissemination in ITNs usage. The findings were that;

1. Trainees share information on effective organization and sensitization about mass distribution of bed nets, nets distribution recording processes as well as marking out beneficiary areas, amongst others.
2. Suggested that, any vital information to be shared must be strategically executed, preferably, for example, on days that communities do not farm.
3. Some ITNs users were to some extent not fully satisfied or convinced regarding the impact of ITNs on malaria prevention and control measures. This based on the reactions from a section of ITNs users based on information obtained from the trainees.

5.1.4 Information utilization, ITNs and impact on Beneficiaries

This theme sought amongst others, to establish how effective and efficient trainees managed and utilized information on education and knowledge sharing in malaria prevention and control projects. The study found out that

1. Respondents, notably, the trainees were articulate on how they managed information on ITNs, concerning its impact on the beneficiaries,
2. More efforts should be put into trainees' information utilization strategy to ensure success of ITNs programs.
3. The focus of trainees, in terms of information dissemination and education on ITNs uses was aligned to the objectives and expectations of ITNs project, to ensure effective utilization of information.

5.1.5 Uses of ITNs among beneficiaries

Responses under the above theme was to help determine the extent to which users imbibed knowledge and how it influenced their understanding on the use of ITNs. Similarly, the information from the respondents also helped to evaluate the impact of ITNs on the users. It was revealed that;

1. Not only did some members of the community abuse the nets, but they also seemed not to be interested in the nets, although they agreed that sleeping under ITNs was the best way to preventing mosquito bites which cause malaria.
2. The findings suggest that a section of the communities had challenges regarding the uses of ITNs, and these challenges potentially had adverse effects on the malaria prevention and control initiatives.

3. Suggested to some extent, that education, information dissemination and distribution of ITNs, were not managed effectively.
4. Established that, the beneficiary communities have embraced ITNs as malaria prevention and control measure, but it required intensive education, especially on how the nets were used to enable them to maximise the value of the nets.

5.1.6 Conclusion of study

The study explored information utilization among trainees on usage of mosquito nets in Adansi North District of the Ashanti Region, specifically, in six communities comprising, Fomena, Adiembra, Danyaase, Nyamebekyere, Nyankomasu and Asokwa. The choice of these communities was motivated by reports of misuse and abuse of ITNs (recommended by the WHO as an effective method for the prevention and control malaria infection), by a section of the communities.

In researching these problems, the case study approach was adopted to not only assist in exploring the intricacies of the phenomenon into more details but, also, it enabled this study to effectively study the communication strategies adopted by trainees in providing ITNs. Besides, the method (discussed in chapter 3) allowed me to use different techniques including observations and interviews (Gray, 2014). For example, the in –depth interviews provided a wealth of detail information on even sensitive issues (Wimmer, and Dominick, 2006), oblivious of the disadvantages, including concerns about fear or possibility of myths attached to the malaria disease, as well as the danger of imposing researcher agenda & eliciting artificial responses (Gray, 2014). Arguably the adoption of a multiple qualitative techniques, ensured accurate assessment of information on the study (Wimmer, and Dominick, 2006), as discussed in the findings above (chapter 4).

The findings raised several issues covering information utilization, ITNs, malaria control and prevention measures relating to malaria endemic communities in Adansi North district of the Ashanti Region. The main findings was that information utilization among ITNs trainees in the Adansi North was effective, however, trainees needed to review their strategy on imparting knowledge and education on the ITNs uses to beneficiaries, to ensure success of ITNs projects in

the communities. The findings emanated from interviewees' reactions to knowledge and understanding of ITNs uses, malaria infections, particularly the causes and their ramifications on the communities in the country's malarial prevention programme as they relate to information utilization by trainees on the ITNs projects in the study area.

Findings affirm that information utilization in communication remains an indispensable element, at all levels of human endeavours, including trainees, hence the need for more effective strategies to enhance information dissemination in the context of knowledge acquisition and education as they relate to this study.

Arguably, this study arrived at findings which are not only original but, that make a significant contribution to understanding the nuances, in terms of knowledge and education on ITNs as they relate to efforts by the government, NGOs and individuals in the fight against malaria infections in endemic communities. This contribution and its originality are borne out of the key findings (outlined already) arising from the various analyses, as well as the theoretical arguments discussed and critiqued. In addition, the scholarship that has emerged from the study, for example, the need for trainees to review their information dissemination strategy, may be of value to other future researchers interested in the wider fields of ITNs, malaria prevention and control education. This also has a huge implication for how trainees, health officials and sponsors of ITNs manage their projects, for if users of the nets or a section of beneficiaries raise issues relating to assimilation of information, then, it opens up many questions as to the impact of education on ITNs projects. For example, the fact that some ITNs users suggested that the abuse or misuse of the nets may be due to inadequate education and practical demonstration pertaining to the use of ITNs, to some extent, raises questions on the level of accuracy of information and the effectiveness of the strategy for information consumed by users. The identification of this deficiency will enable trainees to evolve a more pragmatic strategy to address challenges associated with information utilization in future projects.

Effectively, the study expands the research on ITNs uses and their implications on the malaria control and prevention projects, especially, the affirmation of superstitious beliefs about malaria infections. This is an equally important finding that requires more investigations for future researchers to help disabuse the minds of future generations by re-emphasising the need to accept the fact that malaria infections are caused by mosquito bites and not punishments by deities (to

atone for the sins of parents or ancestors), for which can be prevented by the maintenance of good drainage and effective use of ITNs. As indicated by Kanyangarara et al (2018), the success in the control and prevention of malaria may be based on users' understanding or knowledge acquired about the disease. This expectation becomes achievable through the the adoption of a more effective communication strategy, preferably, a mix of traditional (radio and TV) and a social media paltform like WhatsApp to ccomplement the use of local radio stations and information centres.

Challenges notwithstanding, the study has to some extent, attempted to address key questions relating to the role of trainees on mosquito bed net projects, the the mode of communication between trainees of ITNs and beneficiary communities, the impact of information dissemination in the ITN project and the extent to which beneficiary communities understand the ITNs bed project. This becomes a useful data for future researchers on ITNs uses and their impact on malaria prevention and control.

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Appendix A: Interview Guide for Focus Group Discussions (FGDs)

My name is Lydia Ezit, a graduate student at the Ghana Institute of Journalism (GIJ) in Accra. I am conducting research on the use of mosquito nets. My focus is on “information utilization among trainees on usage of insecticide treated nets (ITN) project in the Fomena District of Ashanti Region”. I wish to indicate that you fall within one of the categories of participants for the study. I would be most grateful if you could spend some few minutes (30 – 60 minutes) with me in an interview, to enable me to get your views on the subject. I also wish to indicate that the interview is voluntary, you do not have to participate if you don't want to, but if you choose to, the information you give will be used in writing the dissertation for the Masters' Degree (MA) award. I assure you that the information you give is for the research only. The submission of the dissertation is in fulfilment of a requirement for the award of a MA in Development Communication at GIJ. The GIJ will give you access to the dissertation if you desire to read, when it is completed.

I will seek your permission to record the interview to help me remember the conversation, in addition to taking some notes (by research assistant if necessary) so as to help me remain focus on the interview. The recording and the transcription of the interview will be kept confidential.

I will appreciate if you could give me your consent or otherwise for the interview.

1. You have been monitoring concerns and complaints on the increasing number of malaria cases the country, and specifically in Fomena and its environs. What are your comments on this situation, are you happy or not, concerning the effects malaria has on us as a people?
2. What do you think could be the cause/factors for the increase in malaria cases in this area?
3. What are we (you) in these communities doing to prevent the increase in malaria cases?
4. Can you mention any other method (s) of preventing malaria, apart the mosquito nets?
5. How do you describe the nets are they insecticide treated mosquito nets (ITNs) or an ordinary mosquito nets?

6. What are your assessments of the nets, are they very effective in preventing you from mosquito bites?
7. Do you know more about the mosquito nets?
8. From where do you get information about the mosquito nets and, is the information educative enough to help you in the use of the nets to prevent mosquitos from biting you.
9. Are you happy or satisfied with the way mosquito nets are being used in this area?
10. What do you think are the motivation for the use of the nets, in terms of cost, availability superstitions, etc?
11. Would you recommend the use of nets for malaria prevention and control, and what reason would give to support the recommendation?

Appendix B: Interview Guide for ITN Trainees

My name is Lydia Ezit, a graduate student at the Ghana Institute of Journalism (GIJ) in Accra. I am conducting research on the use of mosquito nets. My focus is on “information utilization among trainees on usage of insecticide treated nets (ITN) project in the Fomena District of Ashanti Region”. I wish to indicate that you fall within one of the categories of participants for the study. I would be most grateful if you could spend some few minutes (30 – 60 minutes) with me in an interview, to enable me to get your views on the subject. I also wish to indicate that the interview is voluntary, you do not have to participate if you don’t want to, but if you choose to, the information you give will be used in writing the dissertation for the Masters’ Degree (MA) award. I assure you that the information you give is for the research only. The submission of the dissertation is in fulfilment of a requirement for the award of a MA in Development Communication at GIJ. The GIJ will give you access to the dissertation if you desire to read, when it is completed.

I will seek your permission to record the interview to help me remember the conversation, in addition to taking some notes (by research assistant if necessary) so as to help me remain focus on the interview. The recording and the transcription of the interview will be kept confidential.

I will appreciate if you could give me your consent or otherwise for the interview.

1. Can you explain to me the concept of ITNs and the rationale for the use of mosquito nets for control and prevention of malaria?
2. What type of training do trainees acquire or go through, in terms of information management or utilization?
3. What type and from which sources do you get information on ITNs use.
4. How do you use or utilise information on ITNs.
5. How do trainees manage information on ITNs among themselves?
6. How do trainees assess themselves, in terms of information utilisation?
7. What is the mode/form of information dissemination, in terms of language and messages?
8. Are trainees satisfied with information transmission system to users of ITNs?

9. What is your assessment of the impact of ITNs information on users?
10. What communication strategy do trainees use in educating the communities on ITNs?
11. Is the strategy effective for the management and use of information among trainees on ITNs use?

Appendix C: Interview Guide for ITN User Communities

My name is Lydia Ezit, a graduate student at the Ghana Institute of Journalism (GIJ) in Accra. I am conducting research on the use of mosquito nets. My focus is on “information utilization among trainees on usage of insecticide treated nets (ITN) project in the Fomena District of Ashanti Region”. I wish to indicate that you fall within one of the categories of participants for the study. I would be most grateful if you could spend some few minutes (30 – 60 minutes) with me in an interview, to enable me to get your views on the subject. I also wish to indicate that the interview is voluntary, you do not have to participate if you don’t want to, but if you choose to, the information you give will be used in writing the dissertation for the Masters’ Degree (MA) award. I assure you that the information you give is for the research only. The submission of the dissertation is in fulfilment of a requirement for the award of a MA in Development Communication at GIJ. The GIJ will give you access to the dissertation if you desire to read, when it is completed.

I will seek your permission to record the interview to help me remember the conversation, in addition to taking some notes (by research assistant if necessary) so as to help me remain focus on the interview. The recording and the transcription of the interview will be kept confidential.

I will appreciate if you could give me your consent or otherwise for the interview.

1. What measures do take to prevent malaria disease?
2. Do you sleep under mosquito nets?
3. What reasons can you advance for sleeping or not sleeping under mosquito nets?
4. What type of mosquito nets do you use, and why do you use that type (probe to find out if it is ITN or not?)
5. Where do you get the net (s) from, are they readily available. Probe the motivation for using the nets. Is because the users get free supply or not expensive in terms of cost.
6. Can you tell me more about the nets (emphasis on knowledge, education on the use of the nets?)
7. What is the source of your knowledge/education on the use of the net (s)?

8. Through which means/channels do you obtain information on the use of the nets?
9. Is the information on the nets helpful, in terms of how to use them, and the benefits for using the nets?
10. Would you recommend the use of nets for malaria prevention and control, and what reason would give to support the recommendation?

Appendix D: Interview Guide for Health Officials

My name is Lydia Ezit, a graduate student at the Ghana Institute of Journalism (GIJ) in Accra. I am conducting research on the use of mosquito nets. My focus is on “information utilization among trainees on usage of insecticide treated nets (ITN) project in the Fomena District of Ashanti Region”. I wish to indicate that you fall within one of the categories of participants for the study. I would be most grateful if you could spend some few minutes (30 – 60 minutes) with me in an interview, to enable me to get your views on the subject. I also wish to indicate that the interview is voluntary, you do not have to participate if you don’t want to, but if you choose to, the information you give will be used in writing the dissertation for the Masters’ Degree (MA) award. I assure you that the information you give is for the research only. The submission of the dissertation is in fulfilment of a requirement for the award of a MA in Development Communication at GIJ. The GIJ will give you access to the dissertation if you desire to read, when it is completed.

I will seek your permission to record the interview to help me remember the conversation, in addition to taking some notes (by research assistant if necessary) so as to help me remain focus on the interview. The recording and the transcription of the interview will be kept confidential.

I will appreciate if you could give me your consent or otherwise for the interview.

1. Can you update me on the country’s malaria prevention and control measures?
2. Do you think the measures, especially ITNs uses are very effective in the fight against malaria?
3. Do you think information/education/knowledge on the uses of ITNs is adequate enough for users?
4. Are you familiar with any of the strategies for information dissemination on the use of ITNs?
5. What is your assessment of the ITNs in the fight against malaria?
6. Would you recommend the use of nets for malaria prevention and control, and what reason would give to support the recommendation?

Appendix E – list of interviewees

Maame Akua Apeadu	(Adiembra, 12/5/2020) – ITNs User,
Opanyin Kwame Agyei	(Tewobaabi, 4/6/2020), - ITNs User and a retired teacher
Nana Eku	(Adiembra, 20/04/2020), Odikro of Adiembra and ITNs user.
Opanyin Kwame Agyei’s	(Tewobaabi, 4/6/2020) ITNs user
Maame Yaa Dede	(Nyankomasu, 4/4/2020) ITNs User
Kofi Duku	(Nyamebekyere, 3/6/2020). ITNs User
James Ofei	(Adiembra, 18/6/2020) an ITN user,
Janet Oduman	(Danyase, 13/06/2020) ITNs User
Samuel Owusu Ansah,	(Asokwa, 2/3/2020), A nurse & Trainee
Jessica Amankwa	(Danyase, 10/4/2020), ITN trainee
Judith Amo	(Asokwa,10/2/1020) ITN trainee
Adwoa Apau,	(Adiembra, 18/06/2020) ITNs trainee
Afia Abu Bonsrah	(Fomena, 10/06/2020) ITNs trainee
Justice Okley	(20/6/2020) Community health officer
Judith Yaa Oforiwaa	(Fomena, 4/4/2020) Community Health Nurse

Appendix F - Sample of Transcript

Interviewer – Lydia Ezit (**LEE**)

Interviewee – Mr. Samuel Owusu Ansah (**SOA**)

1. **LE** - *Can you explain to me the concept of ITNs and the rationale for the use of mosquito nets for control and prevention of malaria?*

SOA - Thank you Lee, the ITNs are simply nets that have been treated with chemicals to prevent mosquitos from biting people, i mean human beings. It has been recommended by the WHO as the most effective malaria prevention and control measure. For me, i have been living in this community since infancy, in fact you know me as a native in this community and i can tell you that it is very effective in terms malaria prevention.

LE – *But do you think the people understand malaria, its causes and how it can be cured because i have a feeling, from the focus group discussion that most of the communities do not understand that malaria is a disease, they claim is a punishment on victims for the crimes committed by their ancestors. Do you have any startegy to change that mentality, i mean superstition ?*

SOA - Well, we as trainees are also aware of this misintepretation, but i think education plays a role in this misconception and, the distinction must be clear, i mean between the educated and the illiterates when it comes to the understanding of the disease. I think there is the need to convince most of the illiterates in the communities, superstitions are creating misconception and misunderstanding about malaria as an infection which is preventable by using ITNs and treated with prescribed medicines.

2. **LE** - *What type of training do trainees acquire or go through, in terms of information management or utilization?*

SOA – Oh we go through a lot, at least basic communication skills. How to comuunicate the message on malaria causes and prevention, sometimes we deal with specifics. For instance, we try as much as possible to be effectively straight forward with the key elements and importance of ITNs. We try to be focus by managing the misconception, particularly about the

superstitions because we realise it was a problem. In fact we tried as trainees to strategically, manage information, to the extent that we conform to the expectations of Ghana's malaria malaria prevention and control objectives, under of the NMCP. For example, we emphasise on women and childrens as vulnerable people and need to be protected to save their lives. I think by this we were utilising the National Strategic Plan of the NMCP to help reduce the death of children and women to some minimal per centage.

3.LE - *What type and from which sources do you get information on ITNs use?*

SOA – Of course, from under the NMCP. I think they source the information from the gobal level, i mean from the WHO. Such information are clear. It is all about what is the ITNs, the uses and the importance in the fight against malaria. The key information from our souces is knowledge on the use of ITNs and their relevance in the prevention and control of malaria infections. We are also equipped with education on malaria, how it can be managed and prevented through the traditional way of maintaining good sanitation and clean environment, in addition to the use of ITNs and early report of symptoms at health facilities. This forms our main message for the users of ITNs in the beneficiary communities, and it is shared effectively among trainees

4. LE - *How do you use or utilise information on ITNs ?*

SOA - We have been trained to use the information we acquire. We repackage it by ensuring that it suits the communities, in specifics, thus, we recce and identify the needs of individual communities. We consider language, i mean which language will help in our discussions, then communicate to them. The information we acquire help us to explain the concepts, i mean ITNs and other malaria prevention related issues such as good sanitation and clean environment to the beneficiaries. In some instances, we print leaflets containing education on ITNs, most of them in pictorial form and, distribute to the children, especially in schools.

5. LE - *How do trainees manage information on ITNs among themselves?*

SOA - Oh that is normal and simple, we all have the same information because we attend same training seminars and training workshops. We share the same paltforms on whatsApp and use the same manuals. As i said we consider in specifics the nature of communities, in

terms of peculiarity and manage the information. We share ideas and update ourselves on latest information. Basically, that is the way we utilise information among ourselves.

6. LE *How do trainees assess themselves, in terms of information utilisation?*

SOA – Lee this is an interesting question. The fact is, we monitor each other, i mean among ourselves as trainees and encourage each other to do the right things. In most instances, we used criticism and commendation from our clients, i mean the beneficiaries, particularly those who use the ITNs as assessers, i mean from what they say their suggestions etc. Again the success of our job on the field in terms of the number of ITNs distributed and the impact the nets make in the communities also help us to assess ourselves, basically it is teamwork and i think how beneficiaries respond to us largely can determine how we have utilized the information. In fact the feedback from the respondents, if i should put it that way.

7. LE - *What is the mode/form of information dissemination, in terms of language and messages?*

SOA - As i said, we study the area and the outcome of our reach helps us to determine the mode and form, particularly the choice of language, the level of the language and the channel of communication. We normally use Akan, for example here in Adansi because most of the people here speak twi. Sometimes we speak the English language, especially with the educated people here, mostly teachers and a few non-Akan people that i suspect work in the mines, mostly the galamsey people who are from non Akan areas. We take advantage of one-on-one situation, especially when we meet some of them at the distribution centres or homes.

8. LE - *Are trainees satisfied with information transmission system to users of ITNs?*

SOA - We are not perfect, but i think we are quite satisfied. The channels we use, especially the information centres and local radio stations are quite helpful. The leaflets are also not bad, the fact that they are pictorial, it assist in our education programs. However, I think we need more of the demonstration, this is based on the reactions from some of the users. Some even suggest, we should openly demonstrate how the nets are fixed on beds etc.

9. LE - *What is your assessment of the impact of ITNs information on users?*

SOA – I think we are not doing bad, based on the feedback. The fact that they ask questions and criticise us are indications that information is having an impact on the beneficiaries. The strategy is that we are flexible and very accommodating and, I think that is doing the trick for all of us. As my colleagues would tell you, a lot of them are now using the nets, they have minimised the abuse of the nets, I mean not too much for fencing their farms to keep away the domestic animals or using them as goal post nets on football pitches. They really really want to get away from mosquito bites, in my opinion, and I think that alone is enough to show that our messages are making impact in the fight against malaria. Besides I don't have the figures but there is evidence at the hospital indicating that malaria infection is reducing.

10. LE - *What communication strategy do trainees use in educating the communities on ITNs?*

SOA – I think I have made it clear throughout the discussion, if you listened to me carefully.

LE – *Yea, but for emphasis sake, sorry to bother you Sir.*

SOA - OK, yea, our strategy has been simple, and my colleagues will tell you the same thing. I mean to maximise the information given to us by communicating in the language they understand better. We try to help them disabuse their minds of superstition and to encourage them to appreciate the dangers of not sleeping under the nets. Like I said the choice of channels of communication are strategic, especially the information centres and the local FM stations. We use the channels to tell them all the need to know about ITNs and their impact in malaria prevention and control

11. LE - *Is the strategy effective for the management and use of information among trainees on ITNs use?*

SOA – So far so good. We keep improving on it, I mean from community to community and from outreach to outreach.

LE – Thanks for your time.