

**SCHOOL OF PUBLIC HEALTH  
COLLEGE OF HEALTH SCIENCES  
UNIVERSITY OF GHANA, LEGON**



**THE PERCEPTION AND ATTITUDE TOWARDS INSECTICIDE TREATED  
NETS IN THE CONTROL OF MALARIA AMONGST PREGNANT WOMEN  
ATTENDING ANTENATAL CLINIC AT LA GENERAL HOSPITAL**

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THE REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH  
(MPH) DEGREE.**

**JULY, 2015**

**DECLARATION**

I hereby declare that apart from specific references, which have duly been acknowledged, this research is my own work put together.

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Mary Anita Quist

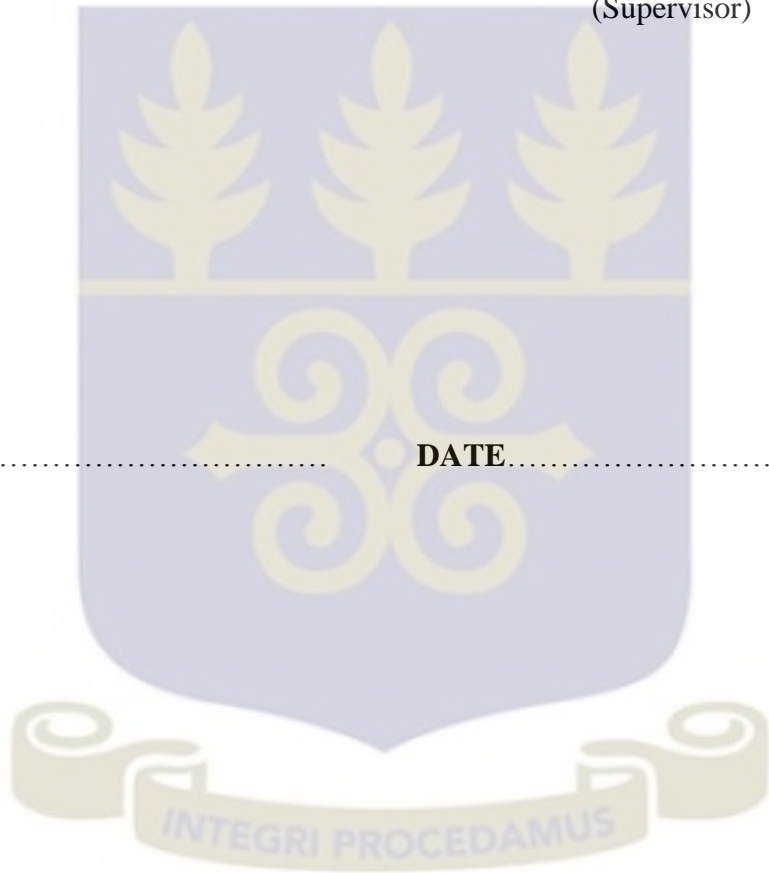
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**DATE**.....

**DATE**.....



## **DEDICATION**

I dedicate this work to my siblings and other relatives for their prayers, support and encouragement in pursuing this course.



## ACKNOWLEDGEMENT

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## TABLE OF CONTENTS

DECLARATION .....	i
DEDICATION .....	ii
ACKNOWLEDGEMENT .....	iii
TABLE OF CONTENTS .....	iv
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
LIST OF ACRONYMS .....	x
DEFINITION OF TERMS.....	xi
ABSTRACT.....	xii
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1. Background.....	1
1.2. Statement of the Problem .....	3
1.3. Justification of the Study .....	4
1.4. General Objective .....	4
1.5 Outline of the dissertation .....	6
CHAPTER TWO .....	7
LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK .....	7
2.1. Introduction .....	7
2.2 Epidemiology of malaria .....	7

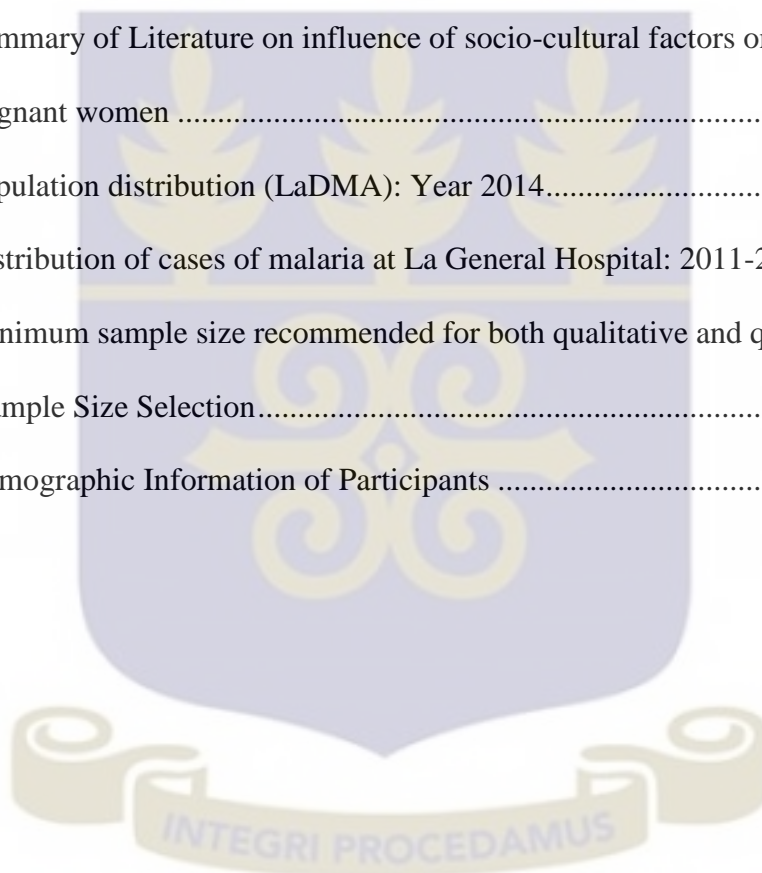
2.3. Types of insecticide-treated nets (ITNs) .....	9
2.4. Theoretical Framework .....	12
2.5. Conceptual Framework .....	18
2.6. Knowledge, attitude and perception of ITN among pregnant women .....	19
2.7. ITN usage during pregnancy .....	25
2.8. Influence of socio-cultural factors on ITN amongst pregnant women.....	28
2.9. Contribution of health personnel towards the promotion of ITN.....	31
2.10 Challenges facing health personnel in the promotion of ITN usage .....	32
2.11. Chapter summary.....	33
<b>CHAPTER THREE.....</b>	<b>34</b>
<b>METHODS .....</b>	<b>34</b>
3.0. Introduction .....	34
3.1. Philosophical and Research Methodological Perspectives.....	34
3.2. Research Design and Strategy / Type of study.....	40
3.3. Description of Study location / Area .....	41
3.4. Sampling method.....	43
3.5. Sample size determination.....	44
3.6. Data Collection Techniques / Methods & Tools .....	46
3.7. Data Analysis.....	48
3.8. Pilot Study .....	51
Proposal and Funding Information .....	54
<b>CHAPTER FOUR.....</b>	<b>55</b>
<b>CASE ANALYSIS.....</b>	<b>55</b>
4.0. Introduction.....	55

4.1. Demographic Information of Participants .....	55
4.2. Knowledge of ITN amongst pregnant women attending ANC .....	57
4.3. Attitudes towards ITN amongst pregnant women.....	58
4.4. Perception of ITN amongst pregnant women.....	59
4.5. The influence of socio-cultural factors on ITN usage .....	62
Effects of Culture and Traditions on ITNs in the Community .....	63
4.6. The contribution of health personnel towards the promotion of ITN usage amongst pregnant women.....	64
4.7. Challenges facing health personnel in the promotion of ITN usage amongst pregnant women .....	66
4.8. Chapter Summary.....	68
CHAPTER FIVE.....	69
DISCUSSION OF FINDINGS .....	69
5.0. Introduction .....	69
5.1. Knowledge of ITN Amongst Pregnant Women Attending ANC At La General Hospital.....	69
Prevention of mosquito bites and malaria (Perceived Seriousness).....	69
5.2. The attitude towards ITN among pregnant women attending ANC at la general Hospital.....	70
5.3. The perception of ITN amongst pregnant women attending ANC .....	72
5.4. The influence of socio-cultural factors on ITN usage amongst pregnant women attending ANC.....	73
Effects of culture and traditions on ITNs usage in the community.....	74
5.5. The contribution of health personnel towards the promotion of ITNs among pregnant women attending ANC .....	75

5.6. Challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC .....	78
5.7. Chapter summary.....	79
CHAPTER SIX .....	80
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	80
6.0. Introduction .....	80
6.1. Summary of the Study .....	80
6.2. Conclusions .....	80
6.3. Contribution to Knowledge.....	83
6.4. Recommendations.....	85
6.5. Limitations to the Study .....	86
6.6.Future Research .....	86
REFERENCES.....	88
APPENDICES:	
Appendix A: Semi-structured interview guide for pregnant women	
Appendix B: Semi-structured interview guide for nurses	
Appendix C: Participant’s consent form	
Appendix D: Summary of data collection techniques and analytical framework	
Appendix E: Sample of data extracts to illustrate qualitative themes that emerged from analysis	
Appendix F: List of participants and date(s) of interview	

## LIST OF TABLES

Table 2.1: Summary of Types of ITNs .....	10
Table 2.2: Theory at a Glance: A Guide for Health Promotion Practice .....	16
Table 2.3: Summary of literature on the knowledge of ITN amongst pregnant women towards ITN usage.....	21
Table 2.4: Summary of Literature on the attitude of pregnant women towards ITN usage ....	23
Table 2.5: Summary of Literature on ITN usage during pregnancy .....	27
Table 2.6: Summary of Literature on influence of socio-cultural factors on ITN amongst pregnant women .....	30
Table 3.1: Population distribution (LaDMA): Year 2014.....	42
Table 3.2: Distribution of cases of malaria at La General Hospital: 2011-2014 .....	41
Table 3.3: Minimum sample size recommended for both qualitative and quantitative study .	45
Table 3.4: Sample Size Selection.....	46
Table 4.1: Demographic Information of Participants .....	56



## LIST OF FIGURES

Figure 2.1: ITN photo .....	11
Figure 2.2: ITN photo .....	11
Figure 2.3: ITN photo .....	12
Figure 2.4: ITN photo .....	12
Figure 2.6: Health Belief conceptual model .....	17
Figure 2.7: ITN Conceptual Framework.....	18



## LIST OF ACRONYMS

ANC	Ante natal Clinic
GHS	Ghana Health Service
ITNs	Insecticide Treated Nets
JHS	Junior High School
LLINs	Long Lasting Insecticide Nets
MICS	Multiple Indicator Cluster Surveys
MOH	Ministry of Health
NMCP	National Malaria Control Programme
RBM	Roll Back Malaria
SHS	Senior High School
UNICEF	United Nations Children's Fund
WHO	World Health Organization



## DEFINITION OF TERMS

Client	User of a product or service
Confidentiality	Protection of information from persons who are not expected to know
Control	A means of limiting or regulating something
Interview	A meeting of people face to face, especially for consultation
Municipality	A city or township that has its local government
Programme	A plan of action



## ABSTRACT

**Introduction:** Malaria poses public health challenge in endemic African countries. Malaria contributes nearly 20% to low birth weight babies in endemic areas, still births and maternal deaths. Pregnant women are more likely to be anaemic and give birth to low birth weight or stillborn babies with malaria infection during pregnancy. Regular use of insecticide treated nets by pregnant women is a vital intervention in the prevention of malaria among pregnant women in endemic areas.

**Objective(s):** The general objective of this study is to explore the perception and attitude towards insecticide treated nets in the control of malaria amongst pregnant women attending Ante Natal Clinic at La General Hospital.

**Methods:** Phenomenological approach was adopted using La General Hospital as a case study organization in the Greater Accra Region. Data was obtained through interviews and documentary review. The interview data was coded using Nvivo software application and analysed using framework analysis. The Health Belief Model was used to interpret the findings of the study.

**Findings:** Most of the pregnant women have appreciable knowledge of what insecticide treated nets are; knew the purpose and importance as well as how they are used. Almost all the respondents demonstrated good attitude towards insecticide treated nets' usage. They view the insecticide treated net as good, better and comfortable and sleeping under it does not affect pregnancy, but rather prevents malaria. Furthermore, most of the respondents perceive that socio-cultural factors do not influence their acceptance and use of insecticide treated net. On the other hand, while health personnel provide pregnant women with the nets and educate them on the importance through public health education, the challenge they face include shortages as a result of government's delay in delivering as well as lack of cooperation between health personnel and pregnant women on the appropriate use of the nets.

**Conclusions / Recommendations:** The findings contradicts findings from earlier studies, which indicated that knowledge of insecticide treated net among pregnant women was still low despite government policy of free supply to vulnerable groups and subsidized nets for other people. The need for health policy makers and health promotion practitioners to focus on creating demand for insecticide treated nets and usage through all available health information channels including social marketing is recommended. The design of educational materials and information on intermittent treated nets usage should take account of the perceptions and attitude of community members especially pregnant women to ensure their maximum acceptance and use.

## CHAPTER ONE

### INTRODUCTION

#### 1.1. Background

Malaria poses a public health challenge in endemic African countries (WHO,2014). Global estimates of malaria indicates at least,3.3 billion people are at risk of being infected with malaria and developing disease,and 1.2 billion are at high risk.The latest global estimates,198 million cases of malaria occurred in 2013 and disease led to 584,000 deaths (WHO,2014).

Global estimates of the malaria disease burden for 2000 indicated that there were at least 300 to 500 million clinical cases annually, of which 90% occurred in Sub-Saharan Africa (Lengeler, 2009). Though with a reduction in clinical cases in 2009, worldwide estimates of the malaria disease burden for 2009 indicated that there were 225 million cases annually (WHO, 2010). Thus, malaria still continues to represent a major public health problem in areas of endemicity. Further reduction was also noticed in 2010, where there were 219 million malaria cases, leading to approximately 660,000 malaria deaths, mostly among African children (WHO, 2010).

Particularly, in malaria endemic African countries, pregnant women are highly vulnerable to malaria infection due to reduced immunity (WHO, 2010). Auta (2012) observed that malaria constitutes a major health problem, with children and pregnant women being the most vulnerable to its morbidity and mortality. According to a United Nations Children's Fund (UNICEF) report, pregnant women are more likely to be anaemic and give birth to low birth weight or stillborn babies with malaria infection during pregnancy (UNICEF,2013). The report notes that regular use of Insecticide-Treated Nets (ITNs) by pregnant women is a vital intervention in the prevention of malaria among pregnant women in endemic areas (UNICEF, 2013).

However, the use of ITNs by pregnant women is very low among pregnant women in Ghana (UNICEF, 2013). According to Multiple Indicator Cluster Surveys (MICS) report, only 33% pregnant women sleeps under ITNs in Ghana (MICS,2011). Another report shows that although some progress has been made across Sub-Saharan Africa, the percentage of pregnant women sleeping under an ITN remains too low (UNICEF, 2013).

Meanwhile, ITNs have been revealed to be the most cost effective measures in the prevention of malaria (Lengeler, 2004; WHO, 2008). The evidence shows that ITNs usage had reduced malaria mortality by 17% in children (Lengeler 2004). In view of the effectiveness of ITNs, the Roll Back Malaria Partnership (RBM) programme has a target to protect 80% of children and pregnant women at risk for malaria with ITNs by 2015 (Eisele et al., 2009).

Ghana, has also established policy guidelines for the implementation and scaling-up the use of ITNs in accordance with the Roll Back Malaria Partnership (RBM) programme and has developed a strategic framework to guide its implementation (Ghana Health Service, 2014). Accordingly, the malaria prevention programme in Ghana was expected to reduce malaria specific morbidity and mortality by 50% by the year 2010 (Ghana Health Service, 2014). To achieve the goal, four main strategies are being pursued. These are to (Ghana Health Service, 2014):

1. Promote multiple prevention which includes promotion of treated bed nets usage; chemoprophylaxis in pregnancy and environmental management;
2. Improve malaria case management at all levels (from household to health facility);
3. Encourage evidence-based research to come up with effective interventions; and
4. Improve partnership with all partners at all levels.

Despite all efforts to combat malaria among pregnant women, the disease has continued to be one of the main causes of morbidity and mortality in Ghana (WHO, 2010). Malaria in pregnancy has been reported to cause high rate of infant and maternal mortality, low-birth weight, school absenteeism, low productivity in farming and other vocation (Ghana Health Service, 2014). Therefore, in order to make all these efforts a reality, it is imperative to explore the knowledge, attitude and perception of ITN in the control of malaria amongst pregnant women; and the contributions as well as challenges encountered by health personnel in the promotion of ITN amongst pregnant women attending ANC at La General Hospital.

### **1.2. Statement of the Problem**

Global estimates of malaria disease burden for 2009 indicated that there were 225 million cases annually (WHO, 2010). According to the National Malaria Control Programme (NMCP), malaria accounts for about 32.5% of all OPD attendances, and 48.8% of under five years' admission in Ghana (NMCP, 2009). Malaria infection in pregnancy has been found to be one of the major public health problems with substantial risks for the mother, foetus and neonate (WHO, 2012).

Several studies have shown that there is a huge gap between availability of ITNs and usage, due to unaddressed knowledge, practices, attitudes, perception and beliefs towards ITN usage by pregnant women (Jima *et al.*, 2005; Runsewe-Abiodun *et al.*, 2012, 2013). A WHO (2013) report says that in most malaria endemic countries of Africa, less than 40% of pregnant women sleep under ITNs. This shows that the use of ITNs in pregnancy remains poor in spite of increased health education and awareness campaigns mounted by government agencies (WHO, 2013). It is against this backdrop that the researcher seeks to explore the perception and attitude of ITNs in the control of malaria amongst pregnant women attending antenatal clinic at La General Hospital.

### **1.3. Justification of the Study**

Although several studies have shown that there is a huge gap between availability of ITNs and usage, due to unaddressed knowledge, practices, attitudes, perception, and beliefs, towards ITN usage by pregnant women (Jima *et al.*, 2005; Runsewe-Abiodun *et al.*, 2012, 2013) no study has been conducted to examine these factors amongst pregnant women attending ANC at La General Hospital. This study will fill this gap.

This study is very relevant because even as a WHO (2013) report says that in most malaria endemic countries of Africa, less than 40% of pregnant women sleep under ITNs, this fact has not yet been ascertained with respect to pregnant women attending ANC at La General Hospital.

While it has been established that the use of ITNs in pregnancy remains poor in spite of increased health education and awareness campaigns mounted by government agencies (WHO, 2013) this reality has not been verified with regards to health providers giving education on the usefulness of ITN to pregnant women attending ANC at La General Hospital. This study seeks to establish the contribution and challenges facing health providers in this direction.

The researcher has some background knowledge of the key issues as a health / medical practitioner and was able to explore the perception and attitude of ITNs in the control of malaria amongst pregnant women attending antenatal clinic at La General Hospital. Thus, the outcome of the study contributes to knowledge and literature in this field.

### **1.4. General Objective**

The general objective of this research was to explore the perception and attitude towards ITNs in the control of malaria amongst pregnant women attending antenatal clinic at La General Hospital.

### ***Specific Objectives***

The specific objectives of the study were:

1. To assess the knowledge of ITN amongst pregnant women attending ANC at La General Hospital.
2. To explore the attitude of pregnant women attending ANC at La General Hospital towards ITN.
3. To assess the perception of ITN amongst pregnant women attending ANC at La General Hospital.
4. To explore the influence of socio-cultural factors on ITN amongst pregnant women attending ANC at La General Hospital.
5. To identify the contribution of health personnel towards the promotion of ITN amongst pregnant women attending ANC at La General Hospital.
6. To identify challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC at La General Hospital.

### ***Research Questions***

The objectives of the study were achieved by addressing the following questions:

1. What is the knowledge of ITN amongst pregnant women attending ANC at La General Hospital?
2. What is the attitude of pregnant women attending ANC at La General Hospital towards ITN?
3. What is the perception of ITN amongst pregnant women attending ANC at La General Hospital?

4. How do socio-cultural factors influence ITN amongst pregnant women attending ANC at La General Hospital?
5. What are the contributions of health personnel toward the promotion of ITN amongst pregnant women attending ANC at La General Hospital?
6. What are the challenges facing health personnel in promoting ITN amongst pregnant women attending ANC at La General Hospital?

### **1.5 Outline of the dissertation**

Chapter one presents the background, the problem statement, the significance, the objectives and the research questions of the study. Chapter two presents the literature review and conceptual framework. Here, literature on the quality of ITNs in the control of malaria amongst pregnant women was reviewed, which served as a springboard for the determination of the contextual framework of the research. Chapter three presents the research methodology adopted, including the research design, data collection procedure and development of data collection instruments. Data preparation and thematic analysis procedures are also covered in this chapter. Chapter four presents the data analysis resulting from the interview data. Chapter five is the discussion of findings of the study and how they relate to existing literature. In chapter six the summary, conclusions and recommendations of the study are presented. The chapter also presents the limitations and contributions made to the study of ITNs in the control of malaria amongst pregnant women. Implications for practice and recommendations for future research are also highlighted.

## CHAPTER TWO

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

#### 2.1. Introduction

This chapter critically highlights Insecticide Treated Nets (ITNs) usage among pregnant women. The literature review provides analysis of related studies on the knowledge, attitude and perception of Insecticide Treated Net (ITN) among pregnant women; and the contributions and challenges encountered by health professionals in educating pregnant women on the use of ITN's. The conceptual underpinnings of the study have been reviewed. That is to say that a summary of the relevant literature informing the study has been presented. Moreover, the concepts, models and principles relevant to the study have been reviewed.

#### 2.2 Epidemiology of malaria

Studies show that malaria is transmitted via the bite of a female *Anopheles* species mosquito, which occurs mainly between dusk and dawn (Filler et al., 2003). Other comparatively rare mechanisms for transmission include: congenitally acquired disease, blood transfusion, sharing of contaminated needles, and organ transplantation (Owusu-Ofori, Betson, Parry, Stothard, & Bates, 2013).

Malaria is a vector-borne disease that is widespread in the tropical and subtropical areas of the world (Basommi, 2011). Malaria occurs throughout most of the tropical regions of the world, with *P. falciparum* causing the largest burden of disease, followed by *P. vivax* (Guerra et al., 2008). It is reported that the *P. falciparum* predominates in Africa, New Guinea, and Hispaniola (Haiti and the Dominican Republic); the *P. vivax* is more common in the Americas and the western Pacific (Snow, et al., 2005). The prevalence of these two species is approximately equal in the Indian subcontinent, eastern Asia, and

Oceania (Snow, et al., 2005; Breman, 2009). The report shows that whilst the *P. malariae* is uncommon and is found in most endemic areas, especially in Sub-Saharan Africa, the *P. ovale*, even less common, is relatively unusual outside of Africa and, where it is found, comprises <1% of isolates (Snow, et al., 2005). Moreso, the *P. knowlesi*, similar morphologically to *P. malariae*, has been identified by molecular methods in patients in Malaysia, the Philippines, Thailand, and Myanmar (White, 2008). This species has not yet been proven to be transmitted from humans to mosquitoes (i.e., a monkey reservoir may be required to infect mosquitoes).

This has become a serious challenge for most developing countries where between 300 and 500 million people are infected annually (WHO, 2010). The disease is a leading cause of infant and child mortality in Sub-Saharan Africa (WHO, 2003). Generally, the symptoms of malaria include: fever, headache and vomiting, and usually appear between 10 and 15 days after the mosquito bite (Basommi, 2011). If not treated, malaria can quickly become life threatening by disrupting the blood supply to vital organs (WHO, 2010). The symptoms of clinical malaria in Ghana, are yellowish eyeball, chills and shivering, headache, a bitter taste, body weakness and yellowish urine (Asenso-Okyere, 1994).

### ***Strategies for malaria control in Ghana***

It would be recalled that Ghana, has also established policy guidelines for the implementation and scaling-up the use of ITNs in accordance with the Roll Back Malaria Partnership (RBM) programme and has developed a strategic framework to guide its implementation (Ghana Health Service, 2014). Accordingly, the malaria prevention programme in Ghana was expected to reduce malaria specific morbidity and mortality by 50% by the year 2010 (Ghana Health Service, 2014). To achieve the goal, four main strategies are being pursued. These are to (Ghana Health Service, 2014):

1. Promote multiple prevention which includes promotion of treated bed nets usage; chemoprophylaxis in pregnancy and environmental management;
2. Improve malaria case management at all levels (from household to health facility);
3. Encourage evidence-based research to come up with effective interventions; and
4. Improve partnership with all partners at all levels.

### **2.3. Types of insecticide-treated nets (ITNs)**

An insecticide-treated net is a mosquito net that repels, disables and/or kills mosquitoes coming into contact with insecticide on the netting material (WHO, 2003). The use of mosquito nets as a protection against nuisance insects was practiced in historical times (Lindsay, 1988). In World War II, Russian, German, and US armies treated bed nets and combat fatigues with residual insecticide to protect soldiers against vector-borne diseases (mainly malaria and leishmaniasis) [(Curtis, 1991)]. In the late 1970s, entomologists started using synthetic pyrethroids: their high insecticidal activity and low mammalian toxicity made them ideal for this purpose (Curtis 1991).

The WHO Global Malaria Programme identifies two categories of ITNs: conventionally treated nets and long-lasting insecticidal nets (WHO, 2003). A conventionally treated net is a mosquito net that has been treated by dipping in a WHO-recommended insecticide that is pyrethroid insecticide. To ensure its continued insecticidal effect, the net should be re-treated after three washes, or at least, once a year. Pyrethroid insecticides, which are used to treat nets, have an excito-repellent effect that adds a chemical barrier to the

physical one, further reducing human–vector contact and increasing the protective efficacy of the mosquito nets (WHO, 2003).

A long-lasting insecticidal net (LLINs) is a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibres (WHO, 2003). The net must retain its effective biological activity without re-treatment for at least, 20 days (WHO standard washes under laboratory conditions and three years of recommended use under field conditions). The LLINs are factory-treated mosquito nets made with a netting material that has insecticide incorporated into the fibres, or as a coating on the fibres. As the lifespan of most nets is three to four years, the insecticides in LLINs remain effective for the whole life of the net. Therefore, there is no need to re-treat LLINs (WHO, 2003). Table 2.1 below shows a summary of the types of ITNs.

**Table 2.1: Summary of Types of ITNs**

<b>Author</b>	<b>Types</b>	<b>Definition</b>
WHO (2003).	Conventionally treated nets	A conventionally treated net is a mosquito net that has been treated by dipping in a WHO-recommended insecticide; that is pyrethroid insecticide
WHO (2003).	Long-lasting insecticidal nets	A long-lasting insecticidal net (LLINs) is a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibres

The following displayed figures 2.1 to 2.4, are usually available for use to control mosquito bite and transmission of malaria parasites.



Figure 2.1: ITN photo

Source: <http://biomed.uwlax.edu>



Figure 2.2: ITN photo

Source : [www.sodzisodzi.com](http://www.sodzisodzi.com)



Figure 2.3: ITN photo

Source : [www.alibaba.com](http://www.alibaba.com)



Figure 2.4 ITN photo

Source: [www.zhenhao58.com](http://www.zhenhao58.com)

## 2.4. Theoretical Framework

The Health Belief Model (HBM) as discussed by Glanz, Rimer and Lewis (2002) was used to explain the findings of the study on reported insecticide treated nets usage in the

control of malaria amongst pregnant women attending ante natal clinic at the La General hospital.

The Health Belief Model (HBM) is by far the most commonly used theory in health education and health promotion (Glanz et al., 2002; National Cancer Institute INCh, 2003). The HBM was first developed by social psychologists Hochbaum, Rosenstock and Kegels (1950s) in response to the failure of a free tuberculosis (TB) health screening program. The HBM has been adapted to explore a variety of long- and short-term health behaviours, including sexual risk behaviours and the transmission of HIV/AIDS. The HBM is a psychological model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals (Hochbaum, 1958).

#### ***Core Assumptions and Statements***

The HBM is based on the understanding that a person will take a health-related action (i.e., in this study, use ITN) if that person (Glanz et al., 2002; National Cancer Institute INCh, 2003) fulfils the following conditions:

1. feels that a negative health condition (i.e., Malaria) can be avoided,
2. has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition (i.e., sleeping under ITN will be effective in preventing malaria), and
3. believes that he/she can successfully take a recommended health action (i.e., he/she can use ITN comfortably and with confidence).

The following four perceptions serve as the main constructs of the model: perceived seriousness, perceived susceptibility, perceived benefits, and perceived barriers. These concepts were proposed as accounting for people's "readiness to act" (Rosenstock et al., 1988). An added concept, cues to action, would activate that readiness and stimulate overt

behaviour. A recent addition to the HBM is the concept of self-efficacy, or one's confidence in the ability to successfully perform an action (Rosenstock et al., 1988). This concept was added by Rosenstock and others in 1988 to help the HBM better fit the challenges of changing habitual unhealthy behaviours, such as being sedentary, smoking, or overeating (Rosenstock et al., 1988). The key concepts are explained below.

### ***Perceived Seriousness***

The construct of perceived seriousness speaks to an individual's belief about the seriousness or severity of a disease (McCormick Brown, 1999). It is argued that while the perception of seriousness is often based on medical information or knowledge, it may also come from beliefs a person has about the difficulties a disease would create or the effects it would have on his or her life in general (McCormick Brown, 1999). For example, if an asthmatic person contracts the flu, it could land at the hospital. In this case, their perception of the flu might be that it is a serious disease. Moreover, a self-employed person having the flu might mean a week or more of lost wages and this would influence their perception of the seriousness of this illness (McCormick Brown, 1999).

### ***Perceived Susceptibility***

Personal susceptibility is one of the more powerful perceptions in prompting people to adopt healthier behaviours (de Wit et al., 2005; Belcher et al., 2005). Perceived susceptibility motivates people to be vaccinated for influenza, to use sunscreen to prevent skin cancer, and to floss their teeth to prevent gum disease and tooth loss (Chen et al., 2007).

### ***Perceived Benefits***

The construct of perceived benefits is an individual's feeling of the quality or usefulness of another conduct in diminishing the danger of developing an ailment (Frank & Swedmark, 2004). For example, among women, the individuals who see an advantage

from colonoscopy (early detection) are more prone to experience screening than the individuals who do not see the screening as having a benefit (Frank & Swedmark, 2004).

### ***Perceived Barriers***

Change is not something that comes effortlessly to the vast majority, and so the last concept of the HBM addresses the issue of perceived barriers to change (Janz & Becker, 1984). This is an individual's own assessment of the hindrances in the method for him or her embracing new behavior. Of the considerable number of concepts, perceived barriers are the most important in deciding conduct change (Janz & Becker, 1984).

### ***Cues to Action***

Notwithstanding the four perception and adjusting variables, the HBM recommends that conduct is likewise affected by cues to action (Graham, 2002). Cues to action are occasions, individuals, or things that move individuals to change their conduct. For example, sickness of a relative, media reports (Graham, 2002) mass communications campaigns, exhortation from others, update postcards from a medicinal services supplier (Mi, 2002) or wellbeing cautioning labels on a product (Mi, 2002). In addition, knowing a kindred church member with prostate tumour is a noteworthy cue to action for African American men to go to prostate malignancy instruction programmes (Weinrich et al., 1998).

### ***Self-Efficacy***

Rosenstock, Strecher and Becker (1988) note that in 1988, self-efficacy was added to the first four convictions of the HBM. Self-efficacy is the faith in one's own capacity to do something (Bandura, 1977). Individuals for the most part do not attempt to do something new unless they think they can do it. On the chance that somebody accepts another conduct is valuable (perceived benefit), however, does not think he or she is equipped for doing it (perceived barrier), odds are that it will not be attempted. For example, major

reason for not performing breast self-examination (BSE) is trepidation of being incapable to perform BSE effectively (Umeh & Rogan-Gibson, 2001). Table 2.2 below simplifies the concepts discussed above.

**Table 2.2: Theory at a Glance: A Guide for Health Promotion Practice**

<b>Concept</b>	<b>Definition</b>	<b>Application</b>
Perceived Susceptibility	One's opinion of chances of getting a condition	Define population(s) at risk, risk levels; personalize risk based on a person's features or behaviour; heighten perceived susceptibility if too low.
Perceived Severity	One's opinion of how serious a condition and its consequences are	Specify consequences of the risk and the condition
Perceived Benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take; how, where, when; clarify the positive effects to be expected.
Perceived Barriers	One's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives, assistance.
Cues to Action	Strategies to activate "readiness"	Provide how-to information, promote awareness, reminders.
Self-Efficacy	Confidence in one's ability to take action	Provide training, guidance in performing action.

Source: (Glanz et al., 2002; National Cancer Institute INCh, 2003)

### ***Conceptual Model***

Figure 2.6 below indicates the conceptual model of the application of HBM. It shows how individual's perceptions of something could be modified by some factors that are likely to cause the person to act in either a positive or negative way.

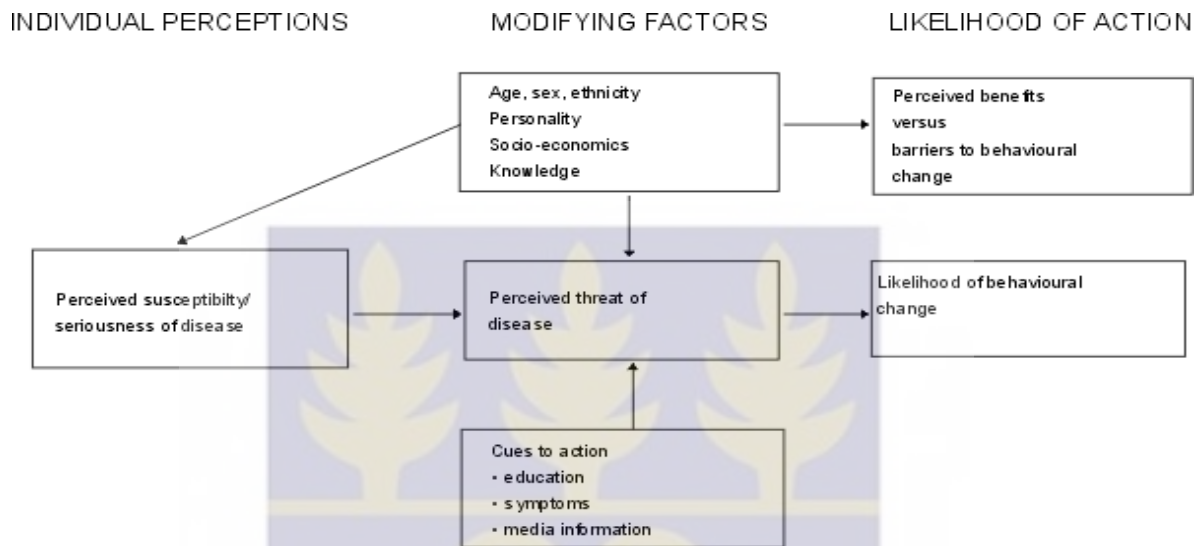


Figure 2.5: Health Belief conceptual model

Source: Glanz et al. (2002, p. 52).

### ***Scope and Application***

The Health Belief Model has been connected to an extensive scope of health behaviours and subject populations. Three wide ranges can be recognized (Conner & Norman, 1996):

1. Preventive health behaviours, which include health-promoting (e.g. diet, exercise) and health-risk (e.g. smoking) behaviours as well as vaccination and contraceptive practices.
2. Sick role behaviours, which refer to compliance with recommended medical regimens, usually following professional diagnosis of illness.
3. Clinic use, which includes physician visits for a variety of reasons.

This study therefore, applied the HBM to explain the findings of the study in relation to the perception and attitude of pregnant women attending ante natal clinic at the La General Hospital toward insecticide treated nets in the control of malaria.

## 2.5. Conceptual Framework

The concepts underlying the study are demonstrated in figure 2.6 below. The conceptual framework identifies themes impacting on the research questions and their interrelationships and/or identifies theoretical and philosophical assumptions underpinning the study. The conceptual framework is often summarised as a flowchart diagram, which shows relationships between concepts and variables/themes of the study (Shields, 2013).

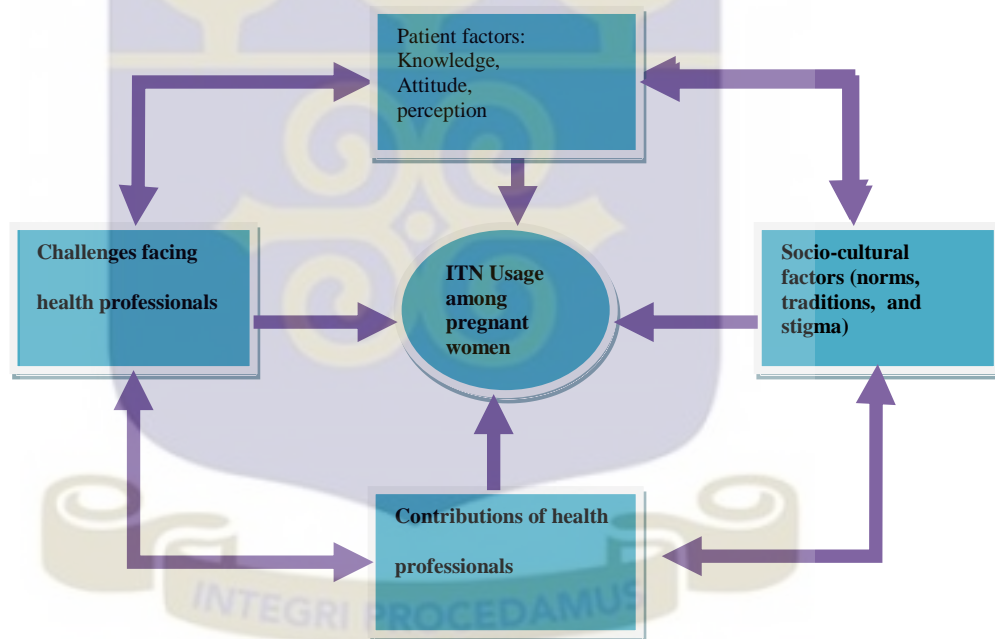


Figure 2.6: ITN Conceptual Framework

Based on the literature review on the concepts that defined the study, the figure 2.6 was developed to indicate the following themes: knowledge, attitude and perception of ITNs, which may influence ITN usage in the control of malaria amongst pregnant women. In other words, the knowledge, attitude and perception of ITN among pregnant women, socio-cultural factors influencing the use of ITN (such as norms, traditions, beliefs and

stigma) as well as the contribution and challenges facing health professionals in the promotion of ITNs among pregnant women are complimentary to its usage. These concepts are discussed below.

## **2.6. Knowledge, attitude and perception of ITN among pregnant women**

This section presents related literature on the knowledge of, attitude towards and perception of ITN among pregnant women. These are presented under three other sub-sections.

### ***The knowledge of ITN amongst pregnant women towards ITN***

This section of the literature review looks at the knowledge of ITN amongst pregnant women. In other words, their perception with regards to ITNs. Against the background of ITN usage, many studies have been conducted on the knowledge, attitude, and perception of pregnant women and ITN use (Okello-Ogojo, 2001; Chukwuocha, 2010; Runsewe-Abiodun & Runsewe, 2013; Obol, Atim & Moi, 2014). In most of these studies, data were collected using semi-closed-ended questionnaires, survey (pre-coded questionnaire), and designed pretested questionnaires. For instance, a study by Iriemenam, Dosunmu, Oyibo and Fagbenro-Beyioku (2011) in Nigeria, revealed that 78.9% of the pregnant women identified infected mosquitoes as the cause of malaria while 86% identified stagnant water as its breeding sites. They observe that knowledge of the benefit of insecticide-treated mosquito bed nets was less prominent as most of the selected subjects decried its high market price (Iriemenam et al., 2011).

A baseline survey conducted by the Commercial Market Strategies Project (CMS, 2000) titled “the level of knowledge, attitudes and practices about malaria and insecticide treated nets (ITNs) in four districts of Uganda: Mukono, Jinja, Mbarara and Arua” found that most respondents (99%) knew about malaria, and had heard malaria education messages (70.6%), mainly on radio (Okello-ogoj, 2001). This means that they might have learned

of insecticide treated nets (ITNs) since they automatically formed part of the education on radio. The survey also found that there was a high level of knowledge that mosquitoes transmit malaria (77.6%) and fever was believed to be the main symptom of malaria by 34% of the respondents (Okello-ogojo, 2001). Nearly half of the urban respondents (48.3%) believed that nets were the most effective way to prevent malaria. In other words, the women of Uganda: Mukono, Jinja, Mbarara and Arua have some substantial knowledge of insecticide treated nets (ITNs).

In another study in South-east of Nigeria, it was found that women's knowledge of ITNs was good (Ukibe et al., 2014). The same can be said about pregnant women in Enugu State in Nigeria, where the authors found they exhibited an overall ITN knowledge constituting 87.9% (Adogu & Ijemba, 2013). In a descriptive cross-sectional study, knowledge of malaria illness and ITNs was also high with pregnant women in the Kilifi district of Kenya (Njoroge, Kimani, Ongore and Akwale, 2007)

There was a significant association between level of education and majority of pregnant women having adequate level of knowledge consisting 86.9% (Njoroge, et al., 2007) Aluko and Oluwatosin (2012) in a cross sectional study also found that one hundred and twenty-seven (37.9%) of the women had high knowledge of Malaria in Pregnancy (MIP).

In contrast, among rural respondents, there was limited knowledge of the best methods to prevent malaria (Okello-ogojo, 2001). There was limited knowledge of nets treated with insecticide (14.1%). However, when the concept of a net treated with insecticide was explained to respondents, 88.3% perceived them to be very important to their households (Okello-ogojo, 2001). Table 2.3 below gives a summary of studies conducted on the knowledge of ITN amongst pregnant women. This is arranged showing first the country, followed by the author(s), the research title and their respective contribution/conclusion in the area.

**Table 2.3: Summary of literature on the knowledge of ITN amongst pregnant women towards ITN usage**

Country	Author	Title	Contribution/Conclusion	Methodology
Nigeria (South-west)	Iyaniwura, Ariba, & Runshewe-Abiodun (2008).	“Knowledge, use and promotion of insecticide treated nets by Health workers in a suburb an town in south western Nigeria: A Descriptive Cross-sectional study”	Target groups in Nigeria should be continually sensitized through social marketing, radio jingles and community participation to ensure acceptance and utilization of the new protective methods. Health care providers, who are the main source of health information to the populace, may need further trainings and re-training on malaria control.	The study used descriptive, cross sectional survey method to gather data from health care workers in Sagamu (Ogun State) Data was collected from 263 health workers using a pretested, structured questionnaire.
Lagos, Nigeria	Iriemenam et al. (2011)	“Knowledge, attitude, perception of malaria and evaluation of malaria parasitaemia among pregnant women attending antenatal care clinic in metropolitan Lagos, Nigeria”	Improvement in knowledge and education of women of child-bearing age has an influential impact on malaria control.	Structured questionnaires were administered in a two-stages research design
Nigeria (South-east)	Ukibe, et al. (2014)	“Knowledge, Attitude and Practices of Pregnant Women concerning the use of Insecticide Treated Bed Nets (ITNs) in Anambra State, South-east Nigeria:	Health education and mass literacy campaign can reverse the poor attitudes and practices to ITNs USAGE among pregnant women	Cross sectional, descriptive study designed was used in this study and a structured questionnaire was self administered to 700 volunteer pregnant women aged 17-45 years
Kenya	Njoroje, Kimani, Ongore and Akwale (2007)	“Use of insecticide treated bed nets among pregnant women in Kilifi District, Kenya”.	Before any malaria preventive intervention is implemented in an area, different socio-cultural factors must be considered when behavioural interventions for malaria control are designed and implemented. Targeted health education should be disseminated to the community to remove stigma and misconceptions associated with ITNs.	A descriptive cross-sectional study and Two hundred and twenty pregnant women attending antenatal clinics (ANC) between October and December 2007
Nigeria (Ibadan)	Aluko and Oluwatosin (2012)	“Utilization of insecticide treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study”	Evaluation of free distribution of ITNs is recommended. Integration of focused ANC and preconception care are advocated to promote early access to health information.	Cross-sectional survey was use and the study utilized a validated structured questionnaire for data collection.

Uganda	Okello-ogojo (2001)	“Knowledge, Attitudes, and Practices Related to Malaria and Insecticide Treated Nets in Uganda. Baseline Survey: December 1999 – January 2000	Since most households perceived ITNs to be very important. The adoption of nets by households is likely to reduce expenditure on malaria treatment and therefore improve household income and foster national economic growth.	The method use was qualitative and involved 700 face-to-face interviews with key decision-makers (male and female) in urban and rural households aged 15 years and above. Sample use of a three-stage cluster random sampling procedure.
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### ***Gaps identified in the above literature (table. 2.3)***

The above literature shows that studies on knowledge of pregnant women of ITN have been given adequate consideration in developing countries (e.g. Iyaniwura, Ariba, & Runshewe-Abiodun, 2008; Iriemenam et al. 2011; Ukibe, et al., 2014; Njoroge *et al.*, 2007; Aluko and Oluwatosin , 2012). However, it appears little literature can be found in Ghana on the subject. It can also be seen from the literature that majority of the ITN studies can be found in Nigeria and Kenya (e.g. Iyaniwura *et al.*, 2008; 2008; Iriemenam et al. 2011; Ukibe, et al., 2014; Njoroge et al., 2007). Exploring this study in Ghana, will help readers to understand the knowledge of ITN from the Ghanaian context.

### ***The attitude of pregnant women towards ITN usage***

This section presents a review of literature on the dispositions to act with regard to the attitude of pregnant women towards ITN. A study in South-east of Nigeria, found that women attitudes towards ITNs and practices were poor (Ukibel et al., 2014). Contrary, another study, which discusses possession, attitudes and perceptions of insecticide-treated bed nets among pregnant women in a post conflict district in northern Uganda, found that 98% of the respondents reported that it was good to use ITN (Obol *et al.*, 2014). A descriptive cross-sectional study, by Njoroge et al. (2007) found that good attitude towards ITNs was very low among pregnant women in Kilifi District, Kenya. Furthermore, Aluko

and Oluwatosin (2012) in a cross sectional study found that only a few 20.9% of the pregnant women in Ibadan, Nigeria demonstrated a positive attitude towards ITNs.

Thus, although most of these studies were conducted in developing countries, such as Nigeria, and Uganda, and Swaziland, it appears none has been conducted in Ghana and therefore, the researcher finds it imperative to assess from Ghanaian respondents using a qualitative perspective to explore the level of knowledge, attitude and perception of pregnant women of ITN. Table 2.4 gives a summary of the studies on the attitude of pregnant women towards ITN. This is arranged showing first the country, followed by the author(s), the research title and their respective contribution/conclusion in the area.

**Table 2.4: Summary of Literature on the attitude of pregnant women towards ITN usage**

<b>Country</b>	<b>Author</b>	<b>Title of research</b>	<b>Contribution / Conclusion</b>	<b>Methodology</b>
Northern Uganda	Obol, Atim & Moi (2014)	“Possession, Attitudes and Perceptions of Insecticide-treated Bed Nets among Pregnant Women in a Post Conflict District in Northern Uganda”	Government and other stakeholders should scale up free ITN distributions among the vulnerable groups if the Ministry of Health and the Roll Back Malaria Global Partnership Target is to be achieved.	Cross sectional study was use for this study in 20 randomly selected internally displaced persons (IDP) camps in Aswa and Omoro counties
Kenya	Njoroge, Kimani, Ongore, and Akwale (2007)	“Use of insecticide treated bed nets among pregnant women in Kilifi District, Kenya”.	Before any malaria preventive intervention is implemented in an area, different socio-cultural factors must be considered when behavioural interventions for malaria control are designed and implemented. Targeted health education should be disseminated to the community to remove	A descriptive cross-sectional study and Two hundred and twenty pregnant women attending antenatal clinics (ANC) between October and December 2007

			stigma and misconceptions associated with ITNs.	
South-east Nigeria	Ukibe et al. (2014)	“Knowledge, Attitude and Practices of Pregnant Women concerning the use of Insecticide Treated Bed Nets (ITNs) in Anambra State, South- east Nigeria:	Health education and mass literacy campaign can reverse the poor attitudes and practices to ITNs USAGE among pregnant women	Cross sectional, descriptive study designed was used in this study and a structured questionnaire was self administered to 700 volunteer pregnant women aged 17-45 years
Ibadan, Nigeria	Aluko and Oluwat osin (2012)	“Utilization of insecticide treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study”	Evaluation of free distribution of ITNs is recommended. Integration of focused ANC and preconception care are advocated to promote early access to health information.	Cross-sectional survey was use and the study utilized a validated structured questionnaire for data collection.

***Gaps identified in the above literature (table. 2.4)***

The above analysis of literature shows that attitude of pregnant women towards ITN has been given satisfactory attention in developing countries. However, it appears no literature could be found in Ghana on the subject. Moreover, it can also be seen from the literature that the majority of the ITN studies can be found in Nigeria and Kenya. Exploring this study in Ghana will help readers to understand the attitude of pregnant women towards ITN usage from the Ghanaian context.

***The perception of ITN usage amongst pregnant women towards ITN usage***

This section of the literature review looks at how pregnant women conceive ITN. In other words, their perception with regards to ITNs. A study by Obol et al. (2014) revealed that about 97% of pregnant women in a post conflict district in Northern Uganda perceived ITN as effective at preventing mosquitoes bites, which transmit malaria; and 96% who

owned ITN was willing to continue using them. Furthermore, a baseline survey by Okello-ogojo (2001) found that in urban areas of Uganda, 48.3% of respondents perceived that the use of nets was the best way to prevent malaria, but in rural areas, the use of nets was only cited by 24.6% of respondents.

Okello-ogojo (2001) in his study noticed that 88.3% of respondents perceived a bed net treated with insecticide to be very important to their household with Arua having the highest percentage (99.4%). Another Ugandan study found that 97% of the respondents perceived ITN as being effective at preventing mosquito bites, which transmit malaria and 98% of the respondents reported that it was good to use ITN (Obol et al., 2014). However, in the Mukono district, Uganda the perception of ITN usage was that the chemicals used to treat them have dangerous effects on pregnancy and the foetus (Mbonye, Neema, & Magnussen, 2006).

### **2.7. ITN usage during pregnancy**

This section also presents review of existing literature on how women use ITNs during pregnancy. Reports show that there is a wide variation in the ITN coverage rates in Sub-Saharan Africa, however, the general trend showed improvements in both ownership and use of ITNs amongst pregnant women in the last decade (Eisele, 2009; van Eijk, 2011). Moreover, Singh, Brown and Rogerson (2013) noted that “over the past decade, significant gains have been made in the implementation of malaria prevention measures in pregnancy in Sub-Saharan Africa, including the distribution of insecticide-treated nets (ITNs)”. The authors added that these have been shown to cause a reduction in the incidence of malaria and its consequences such as maternal anaemia, stillbirths and intrauterine growth restriction. It is therefore, important that ITN usage during pregnancy is reviewed.

Aluko and Oluwatosin (2012) observed low utilization and compliance rates among pregnant women in Ibadan, Nigeria, and found that 20.9% demonstrated positive attitude towards the use of ITNs. This means that majority of the participants did not use ITN. In support of Aluko and Oluwatosin (2012)'s findings, Singh et al. (2013) and Brown et al (2013) reviewed the ownership and use of insecticide-treated nets during pregnancy in Sub-Saharan Africa and found that ownership of ITNs varied from as low as 3% to greater than 80%, and the main determinants were: education, n level, knowledge of malaria, community involvement, socio-economic status and parity, although the significance of each varied between the different settings and studies reviewed. The study further found that cited reasons for not using an ITN were: availability, discomfort, problems with hanging up nets and lack of space, low awareness, and seasonal variations in use (Singh et al., 2013).

In addition, Salaudeen, Jimoh and Musa (2009) found that less than a third, 27% had ever used ITN during pregnancy and only 19% was currently using it, while 23% of the respondents had a member of their household using ITN. That is, 73% of respondents had never used ITN before. Again, a study by Awosan, Ibrahim, Alayande, Isah, Yunusa and Mahmud (2013) disclosed that 27.6% used ITNs (but this constitutes 74.6% of the 67 respondents that owned an ITN). In other words, utilization of ITNs was low despite high knowledge of the commodity among the respondents (Awosan et al., 2013).

However, contrary to the above Adogu and Ijemba (2013) found that among ITN owners 73% of women in Enugu, Nigeria, reported either always sleeping under the net during all trimesters of pregnancy, or always sleeping under the net after they acquired one during pregnancy. A very recent study by Onyeneho, Idemili-Aronu, Okoye, Ugwu and Iremeka (2014) revealed that with respect to sleeping under ITN, more of those with post-secondary education, good knowledge of MIP and currently living with a partner used ITN

every night during the last pregnancy. Those with good knowledge of the causes, effects and prevention of malaria during pregnancy complied more (23.7%) than those with poor knowledge (17.0%). Table 2. 5 below gives a summary of ITN usage during pregnancy and this is arranged showing first the country, followed by the author(s), the research title and their respective contribution/conclusion in the area.

**Table 2.5: Summary of Literature on ITN usage during pregnancy**

Country	Author	Title of research	Contribution / conclusion	Methodology
Nigeria	Aluko and Oluwatosin (2012)	“Utilization of insecticide treated nets during pregnancy among postpartum women in Ibadan, Nigeria: a cross-sectional study”	Therefore, evaluation of free distribution of ITNs is recommended. Integration of focused ANC and preconception care are advocated to promote early access to health information.	Cross-sectional survey was use and the study utilized a validated structured questionnaire for data collection.
Nigeria	Adogu and Ijemba (2013)	“Insecticide Treated Nets Possession and Utilization among Pregnant Women in Enugu Nigeria: A Descriptive Cross-sectional Study”	Government and other stakeholders should make ITNs available and affordable to all pregnant women, while decisions about the nets should consider their shape, size, designs and colour	The study design was descriptive cross-sectional and it involved 290 ante natal clinic attendees in three facilities selected by simple random sampling method and data collected using interviewer-administered questionnaires
Sub-Saharan Africa	Singh, Brown and Rogerson (2013)	“Ownership and use of insecticide-treated nets during pregnancy in sub-Saharan Africa: a review”	There is a need for context-specific approaches and educational components to be incorporated into ITN distribution programmes to address some of the reasons why some pregnant women do not use the ITNs they own.	A comprehensive literature search was the method for the study. It used electronic databases such as Pubmed and CINAHL (2007– 2012), as well as scanning reference lists in October 2012. The searches were limited to the English language, and to studies published from 2007 onwards.
Nigeria	Onyeneho, Idemili-Aronu, Okoye, Ugwu and Iremeka (2014)	“Compliance with intermittent presumptive treatment and insecticide treated nets use during pregnancy in Enugu State, Nigeria”.	Efforts to increase compliance with recommended practices to prevent MIP should focus on providing health education to pregnant women and their partners, who reinforce what the women are told during antenatal care. More qualitative studies need to be conducted on this subject	Cross-sectional study of 720 women who delivered within 6 months preceding the survey in three local government areas in Enugu State was used and it used a structured questionnaire.
Nigeria	Awosan, Ibrahim, Alayande, Isah, Yunusa and Mahmud (2013)	“Prevalence and barriers to the use of insecticide treated nets among pregnant women attending ante-natal clinic at Specialist	Women empowerment (through education and employment) and monitoring of ITNs distribution by the relevant government agencies were suggested as important interventions in	The study used cross sectional descriptive study and randomly selected 185 pregnant women attending antenatal clinic (ANC) at Specialist Hospital Sokoto,

		Hospital Sokoto, Nigeria”	improving availability, affordability and use of ITNs.	in October, 2010. Data collection was done using a set of pretested, semi-structured questionnaires; descriptive statistics was used for analysis.
Nigeria	Salaudeen, Jimoh and Musa (2009)	“Awareness and use of Insecticide Treated Nets among women attending ante-natal clinic in a Northern state of Nigeria”	There is need to focus on creating demand for ITNs through all available health information channels including social marketing	Descriptive cross sectional study was used for this study. Four hundred and fifty-five (455) pregnant women that consented to the study where interviewed during their ANC sessions using semi-structured questionnaires

***Gaps identified in the above literature (table 2.5)***

The above literature review shows a summary of ITN usage during pregnancy. It appears limited literature can be found on Ghana on the subject. However, it can also be seen that the majority of the studies on ITN could be found on Nigeria. Therefore, exploring this will help readers to understand ITN usage during pregnancy from the Ghanaian perspective.

**2.8. Influence of socio-cultural factors on ITN amongst pregnant women**

This section presents review of related literature on the influence of socio-cultural factors on ITN amongst pregnant women. A study conducted in Heping District of Quiongzong County a hyperendemic mountainous area in China found that staying in the mountain (instead of returning to the village at night), using bed net and seeking medical service were three discriminating factors affecting local malaria transmission and control (Cai, et al. 1995).

In the Kilifi District, Kenya, some respondents believed that malaria spread through other ways such as weather changes (exposure to extreme cold or heat), getting wet and sharing of bedding and utensils (Njoroge et al., 2009). Traditionally, other respondents also said they grew up without sleeping under a bed net or did not observe their parents using them and as adult women, they were not used to them. It was found that they sleep on the floor

and not on the bed, especially during hot seasons, which makes it difficult to use bed nets. They use local herbs in the control of malaria (Njoroge et al., 2009). From the above, it could be deduced that one socio-cultural issue that emerged from the Kenyan study, which is “not used to” meaning that for all their life time they had never slept in a net; only to be told after been pregnant that they had to use ITN sounded absurd to Kenya pregnant women (Njoroge et al., 2009).

For instance, in Nigeria, Adogu and Ijemba (2013) found that attitudes and beliefs of the people in the Enugu community was a factor in the use of insecticide treated nets (ITNs) among pregnant women. In that study 18.5% and 15.2% of the respondents gave feeling of “suffocation” and “heat” respectively as reasons for not using ITN while 49.5% of respondents expressed preference for white ITN colour (Adogu & Ijemba, 2013). Chukwuocha et al. (2010) note that the low level of actual use of ITNs by women who had it could be attributed to socioeconomic and cultural factors such as poor or inconvenient accommodation to hang the net. Ibrahim et al. (2014) also found that ethnic groups and religion did not influence the use of ITNs. In the Kolla Tembien district, Tigray, Ethiopia, Zewdneh et al. (2011) also found that inappropriately placed in the houses surveyed amounted to the poor ITN usage among pregnant women. It could be argued that in Nigeria, the colour of ITN, suffocation, and heat influenced the attitudes and behaviours of pregnant women on its usage (Adogu & Ijemba, 2013).

In Ghana, two published studies were found during a literature search on the subject matter (Agyapong & Manderson, 1994; Azabre et al., 2006). However, these studies did not indicate the influence of socio-cultural factors on ITN amongst pregnant women. They rather focused on the socio-cultural beliefs of malaria and how the illness was treated locally. For instance, a study by Agyapong and Manderson (1994) showed that both rural and urban folks used “fever” “atridii” as a dominant term for malaria.

Respondents mentioned various causes of “fever” including exposure to heat from sun or fire, eating oily or starchy food, mosquitoes and unhygienic surroundings (Agyapong & Manderson, 1994). Moreso, a study in the Kassena-Nankana East and West Districts also revealed that some respondents drunk or used local herbs (e.g. Neem tree herbs) for controlling malaria instead of using bed nets (Azabre et al., 2006). They also offered sacrifices to the gods and ancestors for protection from malaria (Azabre et al., 2006). Table 2.6 below gives a summary of studies on the influence of socio-cultural factors on ITN usage amongst pregnant women. Table 2.6 gives a summary of the studies on the attitude of pregnant women towards ITN. This is arranged showing first the country, followed by the author(s), the research title and their respective contribution conclusion in the area.

**Table 2.6: Summary of Literature on influence of socio-cultural factors on ITN amongst pregnant women**

Country	Author	Title of research	Contribution / Conclusion	Methodology
China	Cai, Deng et al. (1995)	“A study on human behavior and socioeconomic factors affecting malaria transmission and control in Qiongzong, Hainan”	Carrying out health education, changing the stay in mountain behavior, increasing the utilization of mosquito nets and reinforcing the primary health care should be taken as the fundamental measures for malaria control programme.	The method use was comparative surveys. Gray relational analysis was used for the analysis
Kenya	Njoroge et al. (2009).	“Use of insecticide treated bed nets among pregnant women in Kilifi district, Kenya”	Before any malaria preventive intervention is implemented in an area, different socio-cultural factors must be considered when behavioural interventions for malaria control are designed and implemented. Targeted health education should be disseminated to the community to remove stigma and misconceptions associated with ITNs. Community concerns and fears should be addressed.	A descriptive cross-sectional study.

Nigeria	Adogu and Ijemba (2013)	“Insecticide Treated Nets Possession and Utilization among Pregnant Women in Enugu Nigeria: A Descriptive Cross-sectional”	Government and other stakeholders should make ITNs available and affordable to all pregnant women, while decisions about the nets should consider their shape, size, designs and colour.	The study design was descriptive cross-sectional and it involved 290 ante natal clinic attendees in three facilities selected by simple random sampling method and data collected using interviewer-administered questionnaires
Ghana	Agyapong and Manderson (1994)	“Mosquito avoidance and bed net use in the greater Accra region, Ghana”.	The study indicated far higher bed net ownership and use in rural than urban areas.	Qualitative research and cross-sectional survey methods were used in a study
Ghana	Azabre et al. (2006).	“Malaria control strategies in the Kassena-Nankana East and West Districts of Ghana”	Malaria control programmes should seek to enhance environmental quality as well as control malaria parasites. The cost and treatment of insecticide treated nets must also be added to the National Health Insurance premium to make them more accessible to vulnerable groups.	The study used questionnaire survey, In-depth interviews and focus group for the study

***Gaps identified in the above literature (table 2.6)***

The above literature shows that studies on the influence of socio-cultural factors on ITN amongst pregnant women have been given adequate consideration in developing countries, such as Kenya, Ghana and Nigeria. However, it can also be seen from the literature that not much has been researched on the area as far as Ghana is concerned. The few studies available on socio-cultural factors focused separately on malaria and ITN usage. It is therefore, important to explore the Ghanaian perspective on the influence of socio-cultural factors on ITN amongst pregnant women.

**2.9. Contribution of health personnel towards the promotion of ITN**

This section presents a review of studies conducted on the contribution of health personnel towards the promotion of ITN. A study in Ratchaburi Province, Thailand, showed that the

use of impregnated bed nets was significantly, related to factors such as knowledge of malaria prevention, perception of benefits of the use, and the receipt of information about the impregnated bed nets from malaria workers (Sri-aroon et al., 1998). A simple health promotion message administered by village midwives raised bed net usage to over 60% in trial hamlets in north Shan State, Myanmar (Lin et al., 2000). All these point to the importance of a strong health education/promotion component in ITN programmes by health personnel where nets are introduced for the first time (Stewart & Marchand, 2003). Local discourses and health workers' ideas and comments influenced concerns about malaria during pregnancy (MiP) interventions (Pell, Straus, Andrew, Meñaca, & Pool, 2011). Hence, exploring the contribution of health personnel towards the promotion of ITN from their perspective at the La General Hospital is necessary for this study.

### **2.10 Challenges facing health personnel in the promotion of ITN usage**

This section presents the literature reviewed on the challenges facing health personnel in the promotion of ITN. Another specific objective of the study was to find out the challenges encountered by health professionals educating pregnant women on the use of ITN's. This objective was arrived at because in the literature it was found that in most African countries such as Nigeria, and Uganda, most respondents in a ten (10) focus group discussion (FGGs) and key informant interview (KIIs) conducted, emphasised that the cost of ITNs followed by their non-availability were constraints to their use (Chukwuocha et al., 2010). Similarly, over half of participants in all the ten FGDs thought that the chemicals used to treat the nets were very harmful to adults, children and pregnant women. This fear was confirmed by key informants who said this was a widely held perception by women in some communities (Chukwuocha et al., 2010).

A study in South-east Nigeria, found that 56% of respondents who owned nets, refused to use ITNs (Ukibe et al., 2014). The reasons for refusal to use ITNs were as follows:

excessive heat, inadequate accommodation to hang nets, house was netted, ITNs do not work, net caused itching, heard ITNs killed someone, does not like ITNs, and no reason at all. The study concludes that whereas the women's knowledge of ITNs was good, the attitudes and practices were poor (Ukibe et al., 2014). Another study found that the major challenges to the use and promotion of ITN by health workers were: lack of conviction about the unique benefits of ITN, inadequate knowledge and poor access to the nets (Iyaniwura *et al.*, 2008). Hence, the researcher deem it necessary to investigate the challenges encountered by health professionals in educating pregnant women on the use of ITN's from the Ghanaian context.

### **2.11. Chapter summary**

The chapter has presented a review of the factors, which are likely to influence pregnant women's use of ITNs. The chapter has shown that the knowledge, attitude and perception of ITN, the influence of socio-cultural factors on ITN (such as norms and traditions) as well as the contribution and challenges facing health professionals in the promotion of ITNs would definitely affect the use of ITN among pregnant women. Not only will these affect ITN, but impact on the health of baby and the mother after safe delivery. Considering the influence of socio-cultural tendencies on women in a country like Ghana (Agyapong & Manderson, 1994; Azabre et al., 2006) a study of this nature will help reveal how best the practice of ITN can be ensured. It is envisaged that the findings would not only expand research and development opportunities of higher institutions, but will also strengthen the care and health counsel given to women during pregnancy. The next chapter presents the methods applied to collect primary data for analysis.

## CHAPTER THREE

### METHODS

#### 3.0. Introduction

This chapter presents the methods that were applied in collecting empirical data for analysis in the study. There are ten sections. Section one is the research design or type of study. Section two presents the study location or area and section three looked at sampling method. Further, section four presents the study population / participants and section five looked at the sample size determination. Furthermore, section six presents the inclusion and exclusion criteria and section seven dealt with data collection techniques / methods & tools. Also section eight deals with data analysis and section nine presents pilot study. Finally, section ten presents the ethical consideration that guided the study.

#### 3.1. Philosophical and Research Methodological Perspectives

This section presents an explanation of the philosophical and research methodological perspectives, research design and the justification for using the chosen method(s). The study employed qualitative research (interviews) using a phenomenological design. The choice of qualitative research method is explained below. The philosophical position on which the study is founded is explained below.

##### *Philosophical Position*

The researcher's perspective is based on interpretivist as against positivist. Lin (1998) argues that the usual juxtaposition of qualitative research against quantitative research makes it easy to miss the fact that qualitative research itself encompasses at least two traditions: positivist and interpretivist. Positivist work seeks to identify qualitative data with propositions that can then be tested or identified in other cases, while interpretive work seeks to combine those data into systems of belief whose manifestations are special to a case (Lin, 1998).

Discussing further, Lin (1998) indicates that qualitative work can be positivist: It can attempt to document practices that lead consistently to one set of outcomes rather than another. To identify characteristics that commonly are related to some policy problem, or to find strategic patterns that hold across different venues and with different actors. Qualitative work also can be interpretivist: It can seek to understand what general concepts like poverty or race mean in their specific operation, to uncover the conscious and unconscious explanations people have for what they do or believe, or to capture and reproduce a particular time, culture, or place so that actions people take become intelligible (Lin, 1998).

However, some differences can be observed. The differences in interpretivist and positivist qualitative work thus are differences in the questions one asks of the data and the types of conclusions one wishes to draw. The important thing is that both forms of qualitative work look for details about preferences, motivations and actions that are not easily made numeric (Lin, 1998).

However, Lin (1998) notes that positivist work seeks to identify those details with propositions that then can be tested or identified in other cases, while interpretive work seeks to combine those details into systems of belief whose manifestations are specific to a case. While both in the end can comment about general principles or relationships, positivist work does so by identifying general patterns, while interpretivist work does so by showing how the general pattern looks in practice. These differences in the use and the conclusions of interpretive and positivist work have led purists in both camps to assert that these two systems of inference cannot be combined (Lin, 1998). The choice of philosophy

assisted in the choice of qualitative research method as suitable for this study as explained below.

### ***Qualitative Research Method***

Researchers have distinguished between two basic approaches towards conducting a research: qualitative and quantitative (Engstrom & Salehi-Sangari, 2007). Qualitative research method as opposed to quantitative research was adopted for this study because qualitative researchers are interested in how people interpret their experiences (Merriam, 2009). Quantitative research is primarily concerned with numbers, high concern for representativeness and highly-structured methods for data collection (Hair et al., 2003). Contrarily, it has been argued that qualitative research reveals how people make sense of their world and the meaning they attribute to their experiences (Merriam, 2009). For instance, Creswell (2007) observes that researchers who engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning, and the importance of rendering the complexity of a situation (Creswell, 2007).

However, qualitative research has the following shortcomings: more time consuming, masses of data to transcribe; more difficult to code data; not applicable to widely dispersed social settings (Onwuegbuzie & Collins, 2005). Researchers Onwuegbuzie and Collins (2005) argue that generally, only a case study with limited applicability to other situations will usually give nominal level data, difficult to quantify; and difficult to control for researcher bias (Onwuegbuzie & Collins, 2005). In spite of the problems listed, the qualitative research method was applied since the goal is to uncover and discover patterns or theories that help to explain a phenomenon of interest, in this case, pregnant women's use of ITNs to prevent malaria (Onwuegbuzie and Collins, 2005). The qualitative research

method was applicable to this study since it is thought to be the best option that could help to understand a particular contemporary phenomenon within its real life context using multiple sources of evidence (Robson, 2003; Silverman, 2006).

### *Case Study*

A single case study approach was applied instead of multiple case studies.

The reasons for the choice of case study was the opportunity to explore insecticide treated nets (ITN) use in the control of malaria amongst pregnant women attending ante natal clinic at La General Hospital. This aimed to seek an understanding of the knowledge, attitudes and perception of pregnant women with regards to ITN in its social contexts. This is in line with observations that case study is the opportunity to gather rich data about a phenomenon and its context, to seek an in-depth understanding of the mutual interaction between a phenomenon and broader organisational and social contexts, and to provide contextualised understanding of the relationship between a researcher and participants of a study (Walsham, 1995; Myers, 2009).

One of the most prominent advocates of case study research, Yin (2009: 14) defines it as “an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”. Saunders et al. (2007) confirmed this when they made the point that the choice of research strategy is guided by the research questions and objectives, the extent of existing knowledge, the amount of time and other resources available, and the researcher’s philosophical foundation. The authors further hurred out that case study approach is best utilised when it involves gaining a rich knowledge of a phenomenon in terms of processes being enacted and the contextual issues involved (Saunders et al., 2007).

This was thought to be the best option because it helps to understand a particular contemporary phenomenon within its real life context using multiple sources of evidence (Robson, 2002). It is anticipated that the phenomenon of using insecticide treated nets (ITN) is certainly influenced by knowledge, attitudes, perceptions and cultural factors among pregnant women. Explaining this behaviour requires in-depth analysis of major concerns from pregnant women. Besides providing in-depth insight into the health personnel's point of view, the case study method gave the opportunity to study each response intensely, in line with Cavaye (1996)'s assertion that: "study of a single case enables the researcher to investigate a phenomenon in depth, enabling a rich description and revealing its deep structure" .In view of this, single case study technique was employed instead of multiple case studies approach (Silverman, 2006). Single case study helps to study a case in its totality (holistic), ie studying units or processes or projects within a single case. Thus, it focuses on a particular unit of analysis and is used to gain an in-depth understanding of a particular entity or event at a specific time (Willig, 2008).

Several criticisms have been labelled against single case study analysis, the most common ones are inter-related issues of methodological rigour, researcher subjectivity, and external validity (Maoz, 2002) .With respect to the methodological rigour, the prototypical view here is that of Maoz (2002) who suggests that "the use of the case study absolves the author from any kind of methodological considerations. Case studies have become in many cases, a synonym for freeform research where "anything goes". The absence of systematic procedures for case study research is traditionally the greatest concern due to a relative absence of methodological guidelines (Yin, 2009).

The second criticism is about the researcher subjectivity (Maoz, 2002). In other words, replicating the study becomes very difficult if not impossible. The third criticism of single case study analysis is the issue of external validity or generalisability (Maoz, 2002).

According to King et al. (1994) “we always do better with more observation as the basis of our generalization in all social science research and all prediction, it is important that we be as explicit as possible about the degree of uncertainty that accompanies our prediction” (p. 212). This is an unavoidably valid criticism. Nevertheless, this approach was applied where the La General Hospital out of the many health facilities was selected and studied in depth in relation to pregnant women’s use of ITN. The choice of phenomenology is explained below.

### ***Phenomenology***

Phenomenology is a study design that suits this study since it focuses on gathering ‘deep’ information and perceptions through an inductive approach (Lester, 1999). For instance, Langdrige (2007) defines phenomenology as a discipline that aims to focus on people's perceptions of the world in which they live in and what it means to them: a focus on people's lived experience. This approach was adopted because the purpose of phenomenological approach is to illuminate the specific perceptions so as to identify phenomena through how they are perceived by the actors in a situation (Lester, 1999). In addition, this approach was applied as phenomenological research generates a large quantity of interview notes, tape recordings, jottings or other records, all of which have to be analysed (Hycner, 1985). Moreover, the choice of phenomenological method was particularly, aimed at helping the researcher to effectively bring to the fore the experiences and perceptions of individuals from their own perspectives (Stanley & Wise, 1993).

The phenomenological design was adopted because it provided direct measures to understand the ITN use in the control of malaria among pregnant women. The idea was to understand the knowledge, attitude and perception of ITN from the perspective of pregnant women; and the contributions of health professionals towards the promotion and

challenges encountered by health professionals in educating pregnant women on the use of ITNs. The choice of phenomenological design was relevant to this study because it helped to gather the perceptions of health professionals. Thus, phenomenological design allows for subject variables to be measured. This approach was also desired because it afforded the researcher more descriptive space (Cooper & Schindler, 2006) which was necessary in gaining a complex and detailed understanding of issues, which could only be established by talking directly with people, and understanding the contexts or setting within which these things arose (Creswell, 2009). The research design and strategy is explained below.

### **3.2. Research Design and Strategy / Type of study**

The study employed qualitative research (interviews) using a phenomenological design / case study approach where the La General Hospital was studied in depth. How the empirical study was conducted has been explained below.

#### *Study Population / Participants*

Some researchers explain that population, which sometimes referred to as the universe is the grand total of what is being measured: people, organizations, industries, firms, departments and sections (Proctor, 2003). Other researchers also indicate that population in research could also be referred to all members of the target as defined by the objectives of the study (Nwana, 2008). Therefore, the researcher recruited pregnant women and nurses of La General Hospital's Ante Natal Clinic. The ANC of the hospital attends to approximately 30 pregnant women a day. This hospital was selected because of proximity to the researcher in terms of data gathering and according to half-year performance review report in 2014, which reported that malaria was the first among the top ten communicable diseases diagnosed. It has set maternity issues as a priority and it is one of the hospitals in Ghana that has the full range of maternity and other reproductive health services. (See

appendix F for list of codes for participants and date(s) of interview). The confirmed cases of malaria in pregnancy are shown in table 3.1 below.

**Table 3.1: Distribution of cases of malaria at La General Hospital: 2011-2014**

<b>Indicator</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Malaria in pregnancy	278	187	143	143
Confirmed malaria in pregnancy	135 (48.56%)	52 (27.81%)	41 (28.67%)	22(15.38%)

### **3.3. Description of Study location / Area**

The study was conducted at the La General Hospital in the La Dade-Kotopon Municipality in the Greater Accra region. The La Municipality shares boundary with: Ayawaso Sub-Metro on the North, Osu-Clotney Sub-Metro on the East, Ledzokkuku Municipality on the west and Gulf of Guinea on the South (LaDMA, 2014).

#### *Demography and Geography*

The LaDMA has a projected population of 224,215 (LaDMA, 2014). The municipality is divided into 3 areas, namely: Tenashie, La South and La North. The Police Hospital is under Tenashie while the 37 Military area is under La North. The target population for the 3 areas is: La North (40.2%), La South (38%) and Tenashie (21.8%) [(LaDMA, 2014)].

Table 3.2 shows the distribution of the population in the municipality.

**Table 3.2: Population distribution (LaDMA): Year 2014**

Age Group	Percent of Pop (%)	La North	La South	Tenashie	Total
Children 0-11 months	4	3717	3514	2016	9247
Children 12-23 months	2.21	2054	1941	1114	5109
Children 24-59 months	6.33	5882	5560	3190	14632
Children 5-14 yrs	22.08	20519	19396	11127	51042
WIFA 15-49 yrs	30	27879	26353	15118	69350
Men 15-49 yrs	27	25091	23718	13606	62415
Men and Women 50-60yrs	4.58	4256	4023	2308	10587
Men and Women 60+	5	4646	4392	2520	11558
Total (%)	100	92929	87843	50394	231166
Expected pregnancy	4	3717	3514	2016	9247
0-15 yrs (M&F)	38.92	36168	34189	19613	89970

Source: (LaDMA, 2014)

The municipality has ten electoral areas. The La General Hospital is under Tenashie area.

### ***Health Facilities***

The La Dade-Kotopon Municipality has a total of 16 health facilities. These are: District hospital (1) , Quasi-Gov't Hospital (1) , Quasi-Gov't Clinic (1), Private Maternity Homes (1), Private Hospital (1), Private Clinics(10) and urban Community-based health

planning and services (CHPS) zones (3). The municipality also runs 31 outreaches every week (LaDMA, 2014).

The La General Hospital has many departments, including the Obstetrics and Gynaecology and Emergency. Currently, the hospital has a 161 bed capacity or complement and total staff of 336. It is both a referral hospital and a National Health Insurance Scheme (NHIS) accredited health provider. In respect of staff numbers in the municipality, it is indicated that there are at least, two (2) Community Health Nurses working under the supervision of a Public Health Nurse in all the sixteen (16) health facilities (LaDMA, 2014).

#### **3.4. Sampling method**

Both purposive and convenience sampling strategies were applied in the study. Purposive sampling technique was adopted to select pregnant women and nurses for interviews. Researcher Babbie (2004) indicates that purposive sampling also referred to as judgmental sampling, is based on the judgment of the researcher regarding the characteristics of the representative sample. In addition, researcher Brink (1996) explains that purposive sampling is based on the judgment of the researcher regarding subjects and objects that are representative of the phenomenon or topic being studied, or who are especially knowledgeable of the question or issue. Despite its inherent bias, purposive sampling was applied because it provided reliable and robust data and its strength actually lies in its intentional bias (Bernard 2002, Lewis & Sheppard 2006).

On the other hand, convenience sampling was adopted in recruiting pregnant women and nurses who were available at the time of the study and willing to participate (Creswell, 2009). Creswell (2009) explains that convenience sampling is also a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. That is to say that convenience sampling is very easy to

carry out with few rules governing how the sample should be collected (Creswell, 2009). This researcher used convenience sampling technique to reach the target population, which was pregnant women and nurses of La General Hospital's Ante Natal Clinic.

The most obvious criticism of convenience sampling is its sampling bias and that the sample is not representative of the entire population (Creswell, 2009). This may be the biggest disadvantage when using a convenience sample because it leads to more problems and criticisms (Creswell, 2007). However, this researcher used convenience sampling for simple purposes such as testing ideas about the subjects of interest as it is the cheapest and simplest: it does not require a list of population and it does not require any statistical expertise (Creswell, 2007). Moreover, this sampling procedure helped the researcher to gather useful data and information that would not have been possible using probability sampling techniques, which require more formal access to lists of populations (Creswell, 2007).

### **3. 5. Sample size determination**

As the study adopted a qualitative research method, the guiding principle in sampling and sample size determination was based on saturation of data (Polite & Beck, 2008). Researchers Polite and Beck (2008) indicate that saturation is the point in data collection when new data no longer bring additional insight to the research questions. For this reason, researcher Charmaz (2006) suggests that the aims of the study are the ultimate driver of the project design, and therefore, the sample size. The researcher suggests that a small study with 'modest claims' might achieve saturation quicker than a study that is aiming to describe a process that spans disciplines (Charmaz, 2006). For a phenomenology study, Creswell (1998) suggests a sample size of between five (5) and twenty-five (25). Additionally, researcher Morse (1994) suggests that at least, a sample size of six (6) is suitable for a phenomenological study. Fraenkel and Wallen (2003) state that there is no

clear-cut answer to what constitutes an adequate or sufficient size for a sample. These authors suggest that the best answer is that a sample should be as large as the researcher can obtain with a reasonable expenditure of time and energy. To resolve the ambiguities associated with the choice of sample size for a qualitative research, this study used the guidelines provided by Onwuegbuzie and Collins (2007) to determine the sample size for the pregnant women and nurses at the La General Hospital's Ante Natal ward. These are described in the table 3. 3 below.

**Table 3.3: Minimum sample size recommended for both qualitative and quantitative study**

<b>Research Design/Method</b>	<b>Minimum sample size</b>
Causal-Comparative	51 participants per group for one-tailed hypothesis 64 participants per group for two-tailed hypothesis
Correlation	64 participants for one-tailed hypothesis 82 participants for one-tailed hypothesis
Experiments	21 participants per group for one-tailed hypothesis
Case study	3-5 participants
Phenomenological	Less than or =10
Grounded theory	15-20
Ethnography	1 cultural group; 30-50 interviews
Human ethological	100 - 400 units of observation

Source: Onwuegbuzie and Collins (2007)

Using this guideline, the sample size for this study ranged between eight (8) and twenty (20): 10 pregnant women and 3 nurses at the Ante Natal Clinic of La General Hospital based on saturation (Polite & Beck, 2008). In other words, the total sample size for the study was thirteen (13). Despite the fact that large samples are more convincing, a total sample of three (3) nurses and ten (10) pregnant women were used for the study as shown in the table 3.4 below.

**Table 3.4: Sample Size Selection**

<b>Target Population</b>	<b>Sample Size</b>	<b>Technique used</b>
Pregnant women	10	Phenomenological
Nurses	3	Phenomenological

*Inclusion Criteria*

The inclusion criteria were that the core participants of the research were antenatal patients and nurses at the Ante Natal Clinic. These were nurses and patients who could communicate verbally with no speech impairment in English, Twi or Ga.

*Exclusion Criteria*

The exclusion criteria for this study included non-pregnant patients visiting the Ante Natal Ward for pregnancy-related malaria and those subjects the researcher could not obtain the necessary permission and cooperation from. Moreover, pregnant women who were too weak were excluded from the study.

**3.6. Data Collection Techniques / Methods & Tools**

This section presents the data collection techniques or methods and tools used to collect primary data. Different techniques, including interviews and documentary review were applied to collect data for analysis. The field work took place in May, 2015.

*Interviews*

The data collection technique for this study was mainly interviews for both nurses and pregnant women at the Ante Natal Clinic of La General Hospital. Some researchers explain that the 'interview' is a managed verbal exchange (Gillham, 2000; Ritchie & Lewis, 2003). Therefore, effectiveness of interviews depends heavily on the communication skills of the interviewer (Clough & Nutbrown, 2007). Some researchers indicate that the aim of interviews is to obtain the individual views of the interviewees (Flick, 2011). For example, Sofaer (2002) postulates that interviews have also been used

to identify best practices found in health plans and survey and also provides an excellent opportunity to probe and explore questions.

Therefore, the type of interview this study applied to gather the qualitative data was the semi-structured interview schedule (Flick, 2011). Flick (2011) notes that this is a set of open-ended questions administered through oral or verbal communication in a face-to-face relationship between the researcher and the respondents. The method was efficient to the researcher and helped to get face-to-face account of the study in question (Flick, 2011).

After gaining the consent of the respondents, the researcher created a rapport to initiate the interview. The researcher allowed free expressions from interviewees and probed further for rich information. The interviews lasted for approximately 15 minutes to one hour for each participant. The interviews took place during Ante Natal Clinic days in an allocated consulting room at the Ante Natal Clinic. The interviews were conducted at the time(s) convenient to the respondents: either before consultation or after consultation with the ante natal physician.

Demographic data such as gender, age, and ethnicity were collected. However, no identifying information such as name, address, phone number, or email address was taken from respondents. Before the researcher conducted each interview, she did the following (Talbot, 1995:477):

1. Thanked the participant for the time and willingness to be part of the study.
2. Reminded the participant about the agreement.
3. Explained that the interview was semi-structured and that probing questions would be determined by the information given by the participant.
4. Asked permission to record the interview.

All interviews were audiotaped with permission from the subjects. After an interview, the researcher played back the recorded data to ensure voice clarity and clarification of unclear issues that might have arisen (See appendix A for the semi-structured interview guide for pregnant women; and appendix B for the semi-structured interview guide for nurses). Documentary review is explained below.

### ***Documentary Review***

Documentary review as a method of data collection was applied as well. Documentary review is a way of collecting data by reviewing existing documents (Center for Disease Control, (CDC, 2009). Relevant literature on the topic was reviewed from journals and websites. Moreover, policy documents from the Ghana Health Service and Ministry of Health on the topic under review were reviewed. These helped to explore the concepts and to explain the findings of the study by making references and inferences (refer to chapters 1 and 2; and see chapters 5 and 6).

### **3.7. Data Analysis**

This section explains how the data gathered were analysed. Some researchers explain that analysis of data in a research project involves summarising the mass of data collected and presenting the results in a way that communicates the most important features (Hancock, 2002). Researcher Hancock (2002) observes that qualitative researchers engage in naturalistic inquiry, studying real-world settings inductively to generate rich narrative descriptions and construct case studies. It is also explained that inductive analysis across cases yields patterns and themes: the fruit of qualitative research (Hancock, 2002).

There are several qualitative analysis options available (Trochim, 1989; Hancock, 2002). However, for phenomenological/casel study, one of the most desirable techniques is to use a pattern-matching logic (Trochim, 1989). Trochim (2000) explains that the trustworthiness and rigor of qualitative research and its data analysis are boosted by a

general procedure called pattern matching logic: this is a strategy for aligning data to theoretical propositions. Such logic according to Trochim (1989) compares an empirically based pattern with a predicted one or with several alternative predictions. The idea is that if the patterns coincide, the results can help phenomenological study to strengthen its internal validity. On the other hand, if the case study is an explanatory one, the patterns may be related to the dependent or the independent variables of the study (or both). If the phenomenological study is a descriptive one, pattern matching is still relevant, as long as the predicted pattern of specific variables is defined prior to data collection (Trochim, 1989).

Yin (2009) also emphasises the value of pattern matching, especially when the theoretical propositions and observational data coincide as predicted and do not coincide as predicted. According to Yin (1994) the ultimate goal of analysing data is to treat the evidence fairly, to produce compelling analytical conclusions and to rule out alternative interpretations. In another sense, data analysis is seen to consist of three concurrent flows of activities: data reduction, data display, and conclusion drawing and verification (Miles & Huberman, 1994). For the purposes of this study, framework analysis was applied as explained below.

#### *Framework Analysis*

In this study, the researcher analysed the interview data using the five (5) stages of data analysis in the framework approach suggested by Pope and colleagues as explained below (Pope, Ziebland, & Mays, 2000).

*Familiarization:* The first stage is familiarisation where the researcher immerses him/herself totally in the raw data by listening to the tapes from fieldwork, reading the transcripts and studying the notes in order to list the key ideas and emphasizing on recurrent themes (Pope et al., 2000).

*Identifying Thematic Framework:* The second stage is the identification of thematic framework where the researcher identifies all the key issues, concepts, and themes through which the data could be examined and referenced. The researcher can do this by drawing on issues and questions that are derived from the aims and objectives of the study as well as issues raised by the respondents themselves and views or experiences that recur in the data. At the end of it, the researcher is able to provide a detailed index of the data, which labels the data into manageable chunks for subsequent retrieval and exploration (Pope et al., 2000).

*Indexing:* The third stage is the indexing where the researcher applies the thematic framework or index systematically to all the data in textual form by annotating the transcripts with numerical codes from the index. This is often supported by short text descriptors to elaborate the index heading. Single passages of text can often encompass a large number of different themes, each of which has to be recorded, usually in the margin of the transcript (Pope et al., 2000).

*Charting:* The fourth stage is where the researcher re-arranges the data according to the appropriate part of the thematic framework to which they relate, and forming charts. For instance, there is likely to be a chart for each key subject area or theme with entries for several respondents. Unlike simple cut and paste methods that group verbatim text, the charts contain distilled summaries of views and experiences (Pope et al., 2000).

*Mapping and Interpretation:* The fifth stage is the mapping and interpretation where the researcher uses charts to define concepts, map the range and nature of phenomena, create typologies and find associations between themes with a view to providing explanations for the findings. The process of mapping and interpretation is influenced by the original research objectives as well as by the themes that have emerged from the data (Pope et al., 2000).

The researcher analysed the data by applying the above-explained strategies. The application of these five stages of analysis assisted the researcher to classify emerging themes from the interview data so as to ensure subsequent analysis. Thus, the interviews were transcribed verbatim and then compared with the audio taped data for any misrepresentation. The transcribed interviews served as primary sources of data for analysis. After transcribing the data, the researcher labeled or coded every item of information gathered so that differences and similarities between all the different items might be recognised so that all the items of data in one interview could be compared with data collected from other interviewees and the theoretical propositions. The interviews were analysed using an Nvivo software application (See appendix D for the summary of data collection techniques and analytical framework; and appendix E for the sample of data extracts to illustrate qualitative themes that emerged from analysis).

### **3.8. Pilot Study**

The interview guide was pretested by interviewing three pregnant antenatal patients at the Legon Hospital in Accra. The researcher made sure that the respondents had similar characteristics as respondents of the main study at La General Hospital. The pilot study was a trial of the instruments of this study: to ensure that they were functioning properly. The pilot study was used for clarity, content and length (Polit & Hungler, 1999). This gave the researcher the opportunity to detect the lapses in the interview guides to improve the researcher's interview skills.

#### *Ethical Consideration*

Ethical clearance was sought and obtained from the Ethical Review Committee of Ghana Health Service (GHS) Research and Development Division, Accra. Approval was also sought from the management of the La General Hospital to use the Ante Natal Clinic for the study. That is to say that an introductory letter was obtained from the School of Public

Health, College of Health Sciences, University of Ghana to the management of La General Hospital in order to seek permission to gather data from pregnant women attending antenatal care and the nurses of the Ante Natal Clinic. Secondly, the researcher was introduced to the pregnant women by the Consulting Nurse. The researcher interacted with the pregnant women to discuss the possibility of participating in the interview.

Furthermore, the researcher did a self-introduction, explained the purpose of the study, confirmed the confidentiality and anonymity of the interviewee and informed the participants of their right to reject or withdraw from participating in the study. Beside this, other ethical considerations that were observed in this research were:

1. The researcher sought the consent of all respondents by asking them to fill a consent form which allowed participants to be part of the study voluntarily (See appendix C for the participant's consent form).
2. The researcher acknowledged all sources of knowledge to avoid any form of plagiarism.
3. Anonymity and confidentiality: The researcher held respondents' information as confidential as possible.

The following processes were also explained to the participants.

#### *Approval of Study Area*

The study was carried out at the La General Hospital in Accra. The researcher made informal contacts with the management of the hospital. This was followed by an introductory letter by the Head of Department of Health Policy, Planning and Management, School of Public Health. Moreover, a copy of the GHS Ethical Clearance was taken along to show to the management of the hospital (See appendix F).

*Description of subjects involved in the study*

The research participants included nurses working as well as pregnant women attending Ante-Natal Clinic at the La General Hospital, Accra.

*Potential Risk and Benefit*

Participation in this study did not involve any risk or cost to the participants. However, the information provided by participants enabled the researcher to get knowledge of ITN usage among pregnant women as an intervention to prevent malaria among these women. The information provided would benefit the participants in a lot of ways as it would create the need for policy makers to focus attention on malaria prevention in the country.

*Data Storage and Usage*

The data was saved and stored on appropriate storage devices such as CDs and pen drives to ensure future reference. The data will be kept for a period not exceeding five years.

*Privacy*

To ensure privacy of participants, their names were not mentioned in the report as codes PW1 to PW10 and N1 to N3 are used (See table 4.1). All information provided by participants are kept confidential between the researcher and the participants.

*Description of Consenting Process*

Participants were approached to seek their consent before their involvement in the study. Thus, participation in the study was voluntary and any decision by respondents not to take part did not affect the relationship between the researcher and the participant(s).

*Voluntary Withdrawal*

Participants could decide to stop participating in the study at any time or decide not to answer certain questions. In the event where a participant withdrew from the study, all data created as a result of their participation were deleted.

### *Compensation*

Participation in the study did not attract any compensation. However, snacks were provided to participants as a way of showing appreciation.

### *Declaration of Conflict of Interest*

The researcher wishes to declare that there is no conflict of interest to disclose regarding this study.

### *Proposal and Funding Information*

The study did not receive any external funding since it was for an award of a Master of Public Health (MPH) degree at the School of Public Health, College of Health Sciences, University of Ghana, Legon. Therefore, all costs incurred were borne by the researcher.

### ***Chapter Summary***

The chapter has presented the methods applied to collect primary data for the study at the La General Hospital, Accra. It has been shown that the research methods applied were appropriate in relation to the objectives of the study. The next chapter presents the case analysis.



## **CHAPTER FOUR**

### **CASE ANALYSIS**

#### **4.0. Introduction**

This chapter presents analysis of the data obtained from the field study conducted in May, 2015, in relation to the objectives and the research questions; and using the research design and strategy indicated in chapters one and three. The findings are presented under five major thematic areas with subthemes under each of them. There are eight sections in this chapter. The first section presents an overview of the demographic characteristics of the respondents. Section two provides an overview of the knowledge of ITN amongst pregnant women attending ANC. Section three presents the attitude towards ITN among pregnant women attending ANC. Section four presents the perception of ITN amongst pregnant women attending ANC. Section five presents the influence of socio-cultural factors on ITN usage amongst pregnant women attending ANC. Section six presents the contribution of health personnel towards the promotion of ITN amongst pregnant women attending ANC. Section seven presents analysis on the challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC. Section eight presents the chapter summary.

#### **4.1. Demographic Information of Participants**

The demographic information of the respondents interviewed from the health facility visited are shown in table 4.1 below.

**Table 4.1: Demographic Information of Participants**

<b>Participant / Code</b>	<b>Age (yrs)</b>	<b>Educational background</b>
Pregnant W1	18	Primary
Pregnant W2	27	JHS
Pregnant W3	25	Primary
Pregnant W4	38	Primary
Pregnant W5	31	JHS
Pregnant W6	21	JHS
Pregnant W7	24	Primary
Pregnant W8	25	Secondary
Pregnant W9	27	JHS
Pregnant W10	32	Secondary
Nurse 1	27	Tertiary
Nurse 2	35	Tertiary
Nurse 3	28	Tertiary
Total 13		

Source: Researcher's Fieldwork, 2015

All the ten pregnant women interviewed were between the ages of 18 and 38 years. On the other hand, all the three health personnel were in the age range 27-35 years. This, however, showed that most of the respondents were in their youthful ages. The educational level of the interviewees was found to be in four different categories. These were Primary, Junior High School (JHS), Senior High School (SHS) and tertiary levels.

#### **4.2. Knowledge of ITN amongst pregnant women attending ANC**

This section presents analysis of findings relating to the pregnant women's knowledge of ITN. The knowledge of ITN will result in its ultimate use. The pregnant women interviewed demonstrated their knowledge of ITN in diverse ways as explained below.

##### ***Prevention of mosquito bite and malaria***

Some participants explained that ITN prevents pregnant women from getting malaria. An interviewee said: “...ITN protects us from getting malaria...” [PW-1]

Secondly, another knowledge demonstrated among the pregnant women was the fact that ITN protects them from mosquito bites. One interviewee explained that:

*“...what I know about the net is that when you are pregnant, you have to use it so that mosquitoes will not bite you to get malaria...”* [PW- 4]

Other participants also expressed the fact that ITN helps to control malaria:

*“...It is good for controlling malaria and they give it to us to control ourselves from mosquitoes...”* [PW- 3]

There were other participants who also indicated that ITN prevents their babies in the womb from catching malaria:

*“...ITNs protect us and the baby inside the womb from malaria. If one knows how to use it well, it's very helpful...”*[PW- 2]

*“...If you get malaria, it will affect the baby in the womb...”*[PW- 4]

To confirm their deeper understanding of ITN, the interviewer inquired from the participants how the ITN could help to prevent malaria. Hanging or fixing the net around the bed and sleeping under it were some of the ways respondents indicated how to use the ITN to prevent and protect themselves from mosquito bite and malaria:

*“...By hanging the net or by fixing the net around the bed and sleeping under the net protects from mosquito bite to prevent malaria...”[PW-4]*

However, some of the pregnant women had no knowledge of ITN. For those who had limited knowledge, this was based on hearsay. For instance, they indicated that there was a negative perception out there that ITN could cause bodily itchiness / itches:

*“I have not been educated on the use of ITN and not used one before but I heard people saying when they sleep inside they feel bodily itchiness”[PW- 6]*

The overall finding as explained above shows an impeccable demonstration of the knowledge of ITN among pregnant women attending ANC. From the above responses, it could be seen that with the exception of one pregnant woman, all the respondents actually gave an impressive answer to the question and showed that ITN protects against mosquito bite and controls malaria. To them, preventing malaria when one uses it means preventing the baby in the womb from getting malaria. Indeed, participants truly showed understanding of how to use the nets in their respective homes. Taking a critical look at the responses, it is clear that the health personnel - nurses are providing the needed education regarding ITN use and its importance.

#### **4.3. Attitudes towards ITN amongst pregnant women**

This section presents analysis of the findings in respect of the pregnant women's attitude towards ITN. This aspect of the interview explored both positive and negative attitudes towards the use of ITN among pregnant women attending ANC at the La general hospital. The responses presented below are grouped accordingly.

##### ***Positive attitude towards ITN amongst pregnant women***

For the positive attitude, the participants expressed the fact that ITN is good to use. As some of them indicated, ITN serves as a substitute by preventing mosquito bite in the

absence of their husbands. In other words, in the presence of their husbands, they do not experience mosquito bites. Some interviewees threw more light on this assertion:

*“...ITN is good for me...When I am with my husband and mosquito bite me, I don't feel it...so if I don't sleep under the ITN and mosquitoes bite me, I will get malaria...”* [PW- 2]

Another positive attitude expressed by these pregnant women was that ITN gave them peace of mind because sleeping under an ITN prevents mosquito bite and malaria:

*“...It is very good when you use it you get peace of mind when...”* [PW- 4]

The results also showed that the positive attitude towards ITN was based on the fact that it was good because nurses say so. Generally, the responses demonstrate that most of the pregnant women have positive attitudes towards ITN.

#### ***Negative attitude towards ITN usage amongst pregnant women***

The negative facet of the attitude found that participants feel warm sleeping under the ITN. In other words, pregnant women showed a negative attitude towards ITN and claimed it generates heat and that sleeping under ITN is very uncomfortable. An interviewee noted:

*“...It is very warm and hot to use it...”* [PW- 9]

The responses show that even as there were positive attitudes, there were equally some negative attitudes towards ITN amongst the participants.

#### **4.4. Perception of ITN amongst pregnant women**

This section of the analysis elicited from the respondents their perception of ITN. The following constitute the responses, which have been grouped under positive and negative perceptions.

### ***Positive Perception of ITN amongst pregnant women***

The perception of ITN varies from person to person. However, the findings from this data showed that pregnant women attending ANC feel better when they sleep under the net.

An interviewee stated:

*“...If I sleep under it, I feel better...”*[PW- 3]

The view of other participants was that ITN is comfortable and sleeping under it does not affect pregnancy, but helps to prevent malaria. In fact, one pregnant woman said:

*“...When I started sleeping inside, I did not get malaria and I feel comfortable...”*[PW- 4]

The perception of other interviewees was that the chemicals applied to treating the ITN do not affect pregnancy when used. In a nutshell, the perception held about ITN that:

*“...I feel better comfortable and the chemicals do not affect pregnancy...”*[PW- 2]

The above shows that the participants had some positive perception of ITN. Nonetheless, there were few misconceptions about it as explained below.

### ***Negative Perception of ITN amongst pregnant women***

Some pregnant women expressed negative sentiments about ITN that it generates a lot of heat when sleeping under it. This was also based on the fact that some community members have complained that they feel the heat when sleeping under the net:

*“...I feel warm when I sleep under it...I feel warm when I sleep under it, but it doesn't affect my pregnancy...”*[PW- 9]

Again, others said that it feels uncomfortable to sleep under an ITN. In other words, there is too much discomfort sleeping under an ITN. Hence, the pregnant women interviewed uttered the fact that ITNs are very uncomfortable to use:

*“...I feel uncomfortable when using it...”[PW- 1]*

On the other hand, in a follow up question, the pregnant women were asked to tell how community members perceive ITNs and the responses showed that the community members perceive that ITNs cause bodily itchiness/itches and uncomfortable to use during pregnancy:

*“...Community members perceive ITNs causes bodily itchiness and uncomfortable to use during pregnancy...”[PW- 10]*

Furthermore, according to the pregnant women, the community members perceive that the chemicals used in the nets are bad, which would affect pregnancy and eventually cause abortion. An interviewee reported that:

*“...Perceives the chemicals used in the nets will affect the pregnancy by causing abortion...”[PW- 2]*

In spite of all the positive and negative perceptions expressed, there were few other participants who did not have any perception whatsoever of ITNs. In fact, they indicated that they had never had any perception of its usage and also because the nurses are the ones to share the nets, they surely hoped they would be educated about its usage:

*“...Nurses share the nets at antenatal, so they will educate us on how to use it as well and so I don't have any perception about ITN usage...”[PW- 6]*

Thus, both positive and negative perceptions with regard to ITN have been expressed according to the analysis above. However, it appears that most of the respondents expressed more negative views in contrast to those who expressed positive views. The reactions from the respondents showed varied community created perceptions of ITN in the various communities the pregnant women hailed from, which are also held by the pregnant women attending ANC. Among some of the known held perceptions of members

in the communities they narrated were that ITN is uncomfortable when sleeping under it, it generates heat, results in bodily itchininess, chemicals used in the nets affect pregnancy, which result in abortion and one has to dry the net before using it, else it will feel warm inside it. Others also said that they do not know of any known perception of ITN among members in the community in which they live.

#### **4.5. The influence of socio-cultural factors on ITN usage**

In the literature review a few cases of social and cultural issues were noted as affecting ITN usage among some people in some countries. Therefore, this study sought as one of its objectives to explore the influence of socio-cultural factors on ITN and its use amongst pregnant women attending ANC at La General Hospital. The following constitute their responses.

##### ***Size of the room***

A respondent indicated a social issue as the size of the room she uses. According to her, the room is too small that she cannot find space enough to hang the net in order to protect herself from the mosquitoes:

*“...Where I stay, the room is very small, so I can't hang the net there to prevent mosquitoes bite so I use a mosquito coil before sleeping instead of the net...”*[PW-

6]

As this could be considered as an environmental factor, further analysis was made to unearth the implications of ethnicity or religion for ITNs usage among the women. The revelation is explained below.

### ***Influence of Ethnicity or religion on ITN***

Most of the respondents indeed reported that socio-cultural factors do not influence their acceptance and use of ITN. Specifically, participants indicated that ethnicity and religion were far from influencing ITN usage. One pregnant woman said:

*“...I don’t think that if you are an Ewe, a Ga, a Muslim or a Christian it will affect the use of the net...” [PW- 9]*

Thus, the only socio-cultural factor noticed among the pregnant women attending ANC was the room size. However, generally, there was no such thing as socio-cultural factors among those interviewed.

### ***Effects of Culture and Traditions on ITNs in the Community***

The above sub-theme revealed the community perspectives with regard to the culture and traditions of the people and their effect on the use of ITNs. These views were sought through the pregnant women attending ANC because they live in the community and for that matter might have heard people discuss ITNs with regard to socio-cultural issues. Thus, the following constitute their responses.

### ***Burning of herbs to control mosquito bites***

The burning of herbs to control mosquitoes was one of the culture and traditions identified. According to them, burning of herbs, peels of orange and dried palm nut chaff have been the practice among the people in the community for years. The belief is that the scent from the herbs drives the mosquitoes away:

*“...some people don’t like using the net to control malaria, but rather burn certain herbs to prevent mosquitoes from biting them to get malaria, but I think it is in vain because when the scent of herbs vanishes, the mosquitoes will return and bite you...” [PW- 5]*

According to these pregnant women, other people also use the herbs to control malaria by boiling and drinking them intermittently:

*“...Some people use herbs in controlling malaria by boiling these herbs and drinking it everyday...”*[PW 2]

Though there was a lack of knowledge of the issue with respect to what they know, the respondents said that people burn peels of orange and palm nut chaff to control malaria. That is, the use of herbs in controlling malaria mosquitoes from biting them are some of the practices in the communities.

#### **4.6. The contribution of health personnel towards the promotion of ITN usage amongst pregnant women**

This section presents analysis of the interview data relating to how the health professionals were developing strategies promote the use of ITN among pregnant women attending ANC. Excerpts of the sub-themes on the roles of health personnel, which emerged from the interviews are presented below.

##### ***Education on the importance of IT nets***

The analysis disclosed tremendous efforts and contribution by health personnel in educating pregnant women about the importance of ITNs towards their health during and after pregnancy. Thus, health personnel provide the needed education for first time pregnant women who visited the antenatal care unit. The process of registration was explained:

*“...For the first time pregnant women, immediately they register services are provided for them.. We give them the nets and educate them on how to use them and the importance of using them also for them being pregnant women, it is*

*important that they use the nets to protect themselves and also the baby in the womb from malaria... ”[N- 1]*

What happens is that every morning, the health personnel give health talk on several topics, which also cover the importance of ITNs and how pregnant women may care for themselves and the babies in their womb:

*“...Here at the ante natal, every morning, we give health talks on different topics and even this morning we gave health talks... the care for them and the baby in the womb... ”[N- 1]*

In other words, the education on the use of ITN is part of a broader package given to pregnant women attending ANC.

#### ***Distribution of IT nets to pregnant women***

The health personnel explained that when the nets are given out to these pregnant women, there is a follow up with education on how to fix or hang it. As a matter fact, the health personnel indicated that they do these demonstrations because there are two different types of ITNs. There is one with rings and another one without the rings. The one with the rings must be fixed at the appropriate place and the one without the rings, at the four corners of the bed as indicated:

*“...When we give them the ITNs, we demonstrate to them how to use them... ”[N- 1]*

It was revealed that health personnel sometimes go to the pregnant women to find out whether they have the nets in their homes as part of the strategies to check ITN usage:

*“...Nurses educate them on the importance of using the nets in preventing malaria and abortion of foetus... ”[N- 2]*

Besides, health professionals distribute the nets to the pregnant women and educate them on the importance of using them so as to prevent malaria and abortion of the foetus.

#### ***Door to door community education on ITN usage***

The analysis also exposed the fact that there are Community Health Nurses (CHNs) who are assigned to carry out health education on ITNs in the communities. Through this door to door strategy they are able to distribute the nets to pregnant women who might not own one and to find out if owners were using them or not. These Community Health Nurses prepare reports to health personnel about their progress:

*“...We have community health nurses in the community and during home visits, they educate the pregnant women and mothers on the importance of the nets and teach them how to use them...”*[N- 1]

*“...The community nurses carry out the community education on the ITNs and we take reports from them...They go to the women’s homes and find out if they have the nets and are using them, if there are none, they distribute the nets to them...”*

[N- 3]

In other words, community health nurses visit pregnant women, educate them on ITNs and make enquiries about ownership of the nets and their use.

#### **4.7. Challenges facing health personnel in the promotion of ITN usage amongst pregnant women**

This section presents the analysis in respect of factors that health personnel perceive as impeding their work in general and specifically, in the promotion of ITN use amongst pregnant women. The following sub-themes presented are based on analysis of the responses.

### ***Shortage of ITNs***

The analysis revealed that shortages, as a result of delays in ITN delivery were the main factors that impede their work in general and specifically in the promotion of ITN use amongst pregnant women. According to the health personnel, the government's delays in providing more ITNs on time create the situation where pregnant women would have to purchase them on their own. However, since some of them lack the money to afford ITN during shortage at the health facility, they live without using the nets:

*“...Yes, you know, sometimes government brings the nets but every day, every time we attend to new pregnant women and new group coming in...We distribute the nets and sometimes the nets get finished and when you request for them it takes time to get them so new pregnant women have to wait to get some...At this moment we have shortage...”[N- 1]*

*“...Normally, the ITNs don't come for us to distribute them...Some of them have to buy to use them and even they complained it's uncomfortable to use them..Due to financial reasons, when there is a shortage of nets at the ante natal, some don't have money to buy them...”[N- 2]*

Another challenge noted as narrated by the health personnel was the fact that most pregnant women dislike the use of ITN as explained below.

### ***Lack of Cooperation on the Appropriate use of ITNs***

There appears to be a lack of cooperation between health personnel and pregnant women on the appropriate use of the ITNs. While health personnel educate and insist that pregnant women adhere to specific instructions on the use of the ITN, pregnant women on the other hand refuse to use on grounds that it is warm and uncomfortable sleeping under it

*“...Mostly, they complain it’s very warm and uncomfortable when they sleep under them...”[N- 2]*

Interestingly, according to the health personnels, some of the pregnant women categorically indicate to them that they do not have mosquitoes at home and therefore, they see no reason why they have to use ITNs:

*“...Some of them tell us they are no mosquitoes in their room so they don’t use the nets...”[N- 2]*

The above analysis has shown few problems confronting health personnel in their job to educate pregnant women to use the ITNs in the communities.

#### **4.8. Chapter Summary**

The chapter has presented case analysis, which started with the demographic information of participants. This was followed by analysis of the data on the themes: knowledge, attitude and perception of ITN among pregnant women. Furthermore, this chapter analysed data on issues regarding influence of socio-cultural factors and their effects on ITN indicating various sub-themes. In addition, the contribution of health personnel towards the promotion of ITN amongst pregnant women and the sub-themes that emerged were likewise analysed. Finally, the chapter has shown that while efforts are made by health personnel to educate pregnant women to use the ITNs, they also face constraints some of which are beyond their control. The next chapter presents the discussion of the study.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS

#### 5.0. Introduction

The findings of the study are discussed in relation to current literature in this chapter. Section one presents the knowledge of ITN amongst pregnant women attending ANC. Section two presents the attitude towards ITN among pregnant women attending ANC. Section three presents the perception of ITN amongst pregnant women attending ANC. Section four presents the influence of socio-cultural factors on ITN usage amongst pregnant women attending ANC. Section five presents the contribution of health personnel towards the promotion of ITN amongst pregnant women attending ANC. Section six presents the challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC. Section seven presents the chapter summary.

#### 5.1. Knowledge of ITN Amongst Pregnant Women Attending ANC At La General Hospital

This section presents the discussion of findings relating to the knowledge of ITN amongst pregnant women attending ANC and discussed in relation to existing literature.

##### *Prevention of mosquito bites and malaria (Perceived Seriousness)*

It would be recalled that the construct of perceived seriousness is about an individual's belief about the seriousness or severity of a disease (McCormick Brown, 1999). The findings showed that pregnant women attending ANC at La General Hospital indeed have appreciable knowledge of what ITN is used for. In fact, the pregnant women actually knew that ITN protects and helps pregnant women to control themselves against malaria and the unborn baby. This is an impeccable demonstration of knowledge of ITN among the pregnant women. This corroborates the findings of Okello-ogojo (2001) that nearly half (48.3%) of the urban respondents from: Mukono, Jinja, Mbarara and Arua in Uganda

believed that nets were the most effective way to prevent malaria. The same can be said about pregnant women in Enugu State in Nigeria, where study participants exhibited an overall ITN knowledge of 87.9% (Adogu & Ijemba, 2013).

A step further in the findings as far as the knowledge of pregnant women was concerned revealed that they knew the purpose and importance of ITN and how it is used. This again supports Okello-ogojó (2001)'s study which found that 88.3% of study participants in Uganda, perceived ITN to be very important to their households.

In relation to the health belief model (HBM), the findings with regard to knowledge of ITNs suggest that pregnant women perceive with all seriousness the use of ITNs. Thus, "the perception of seriousness is often based on medical information or knowledge, it may also come from beliefs a person has about the difficulties a disease would create or the effects it would have on his or her life in general" (McCormick Brown, 1999: p27). In other words, the knowledge that ITN protects and helps the pregnant women to control themselves against malaria and the unborn baby demonstrates the perceived seriousness with which they see malaria as a dangerous disease.

## **5.2. The attitude towards ITN among pregnant women attending ANC at la general Hospital**

This section presents the findings and how they relate to literature in respect of the pregnant women's attitude towards ITN usage. There were both positive and negative attitudes as explained below.

### ***Positive attitude towards ITN usage amongst pregnant women (Perceived Benefits)***

One of the key issues of the health belief model (HBM) is perceived benefits, which is an individual's feeling of the quality or usefulness of another conduct in diminishing the danger of developing an ailment (Frank & Swedmark, 2004). Regarding the attitude of

pregnant women towards ITN, the study found that they see an advantage in the use of ITN, including the fact that it helps the pregnant women and their unborn baby against mosquito bite and associated malaria. Again, one of the benefits expressed by the pregnant women in sleeping under ITNs is that it prevents mosquito bites and helps to control malaria.

Generally, the pregnant women have a positive attitude towards ITNs. The findings disclosed that with the exception of a few negative cases, almost all the respondents demonstrated good attitude towards ITN. The disposition to act with respect to ITN usage was largely positive. This finding does not support a study in South-east of Nigeria, which found that women's attitudes towards ITNs usage and practices were poor (Ukibe et al., 2014). However, it supports a study of pregnant women in a post conflict district in northern Uganda, which found 98% of the respondents reporting that it was good to use ITN (Obol et al., 2014).

#### ***Negative attitude towards ITN usage amongst pregnant women (Perceived Barriers)***

It would be recalled from chapter two that the concept of perceived barriers to change is an individual's own assessment of the hindrances in the method for him or her embracing new behavior (Janz & Becker, 1984). The findings showed a negative attitude where the pregnant women complained that ITNs usage generates heat and that sleeping under ITN is very uncomfortable. This supports a descriptive cross-sectional study, which found that good attitude on ITNs usage was very low among pregnant women in Kilifi District, Kenya (Njoroge et al., 2007). Furthermore, Aluko and Oluwatosin (2012) in a cross sectional study found that only a few (20.9%) of women in Ibadan, Nigeria, demonstrated a positive attitude towards the use of ITNs.

As Janz and Becker (1984) argue, change is not something that comes effortlessly to the vast majority, and so the concept of perceived barriers to change can be related to the

negative attitude expressed above. Some pregnant women indicated that the heat and the discomfort associated with ITN was a hindrance to embracing the use of ITN as a new behaviour. Of the considerable number of concepts, perceived barriers to change is the most important in deciding conduct of change (Janz & Becker, 1984). Thus, if health personnel would educate users of ITNs and reassure them that the benefits outweigh the negatives, the use of ITNs may be greatly increased. Health education and mass literacy crusade can reverse the poor attitudes and practices to ITNs usage among pregnant women (Ukibe et al., 2014).

### **5.3. The perception of ITN amongst pregnant women attending ANC**

This section presents the discussion of findings on the perception of ITN in relation to prevailing literature. The study found both positive and negative perceptions.

#### *Positive Perception of ITN amongst pregnant women (Perceived Benefits)*

As Frank and Swedmark (2004) explained in chapter two, the construct of perceived benefits is an individual's feeling of the quality or usefulness of another conduct in diminishing the danger of developing an ailment. The findings showed that pregnant women attending ANC view ITN as good, better and comfortable and sleeping under it does not affect pregnancy but rather prevent mosquito bite and associated malaria disease. This buttresses Obol et al. (2014)'s finding that about 97% of pregnant women in a post conflict district in Northern Uganda, perceived ITN as effective at preventing mosquito bites, which transmit malaria; and 96% who owned ITN was willing to continue using them. The findings also corroborate Okello-ogojo (2001)'s finding that 48.3% of respondents in urban areas in Uganda, perceived the use of nets as the best way to prevent malaria. A study in Ratchaburi Province, Thailand (Sri-aroon,1998, Rauyajin et al. 1998) showed that the use of impregnated bed nets was significantly related to the factor: perception of benefits of the use.

Again, using the HBM, this finding also supports the perceived benefits concept. That is, ITNs according to the participants do not affect pregnancy, but rather prevent malaria. Since most pregnant women perceived ITNs to be very comfortable and good, the adoption of these nets is likely to reduce expenditure on malaria treatment and therefore, improve household income and foster national economic growth (Okello-ogogo, 2001).

#### ***Negative Perception of ITN amongst pregnant women***

The findings also showed that both pregnant women at the La General Hospital and some community members as indicated by these pregnant women complained that they feel the heat and warm conditions generated when they sleep under the net. Furthermore, according to the pregnant women, members of the communities perceive that the chemicals used in treating the nets are bad, which would affect pregnancy and eventually cause abortion. With the exception of this study and its finding on negative perception, which departs from the usual positive perception, perception of ITNs in the literature has always been positive (Obol et al., 2014).

#### **5.4. The influence of socio-cultural factors on ITN usage amongst pregnant women attending ANC**

This section presents discussion of findings and their relationship to extant literature on the influence of socio-cultural factors on ITN usage amongst pregnant women attending AC. There were three sub-themes identified as presented below.

##### ***Size of the room (Perceived Susceptibility)***

As observed in chapter two, personal susceptibility is one of the more powerful perceptions in prompting people to adopt healthier behaviours (de Wit et al., 2005; Belcher et al., 2005).

One socio-cultural factor noticed in the findings was the room size where pregnant women may hang their nets at night. Participants indicated that small size of their rooms affected how they could easily hang and use the ITNs. In fact, a participant indicated:

*“...room is very small, so can't hang the net there to prevent mosquitobite... use a mosquito coil before sleeping instead of the net...”*. [PW-6]

As reported by Chukwuocha et al. (2010) the low level of actual use of ITNs by women who had it could be attributed to socioeconomic and cultural factors such as poor or inconvenient accommodation to hang the net. Zewdneh et al. (2011) also found that in the Kolla Tembien district, Tigray, Ethiopia, inappropriate placing of ITNs in the houses surveyed amounted to the poor ITN usage among pregnant women.

#### *Influence of Ethnicity or religion on ITN*

The findings revealed that socio-cultural cases found in the data contradict to a very large extent those reviewed in the literature section of this study (refer to chapter two). Generally, there was no such thing as socio-cultural factors among those interviewed as most of the respondents indeed reported that socio-cultural factors do not influence their acceptance and use of ITNs. One pregnant woman stated:

*“...think that if you are an Ewe, a Ga, a Muslim or a Christian, it will not affect the use of the net”*. [PW- 9]

This supports Ibrahim et al. (2014)'s study when they found that ethnic groups and religion did not influence the use of ITNs.

#### *Effects of culture and traditions on ITNs usage in the community*

The study also revealed some community perspectives with regard to the effects of culture and traditions on the use of ITNs. Community members adopt some cultural practices to prevent mosquito bite in the control of malaria as explained below.

### *Burning of herbs to control mosquito bite*

The findings showed that burning of herbs to control mosquitoes was one of the cultural and traditional practices of the people in the communities. The belief is that the scent from the herbs drives the mosquitoes away. This finding actually supports studies, which reported that herbs are mostly used in the cure for malaria in Ghana (Azabre et al., 2006). Particularly, a study in Kassena-Nankana East and West Districts revealed that some respondents drink or use local herbs (e.g. Neem tree herbs) for controlling malaria instead of using bed nets (Azabre et al., 2006). This also has a relationship with the practices of people in the Kilifi district, Kenya, where some respondents informed that they use local herbs in the control of malaria (Njoroge et al., 2009).

These findings debunk the HBM, which suggests that perceived barriers is an individual's own assessment of the hindrances in the method for him or her embracing new behaviour (Frank & Swedmark, 2004). Although the notion of perceived barriers is the most important in deciding conduct of change (Janz & Becker, 1984) this study shows that socio-cultural factors do not serve as a barrier to the use of ITN among pregnant women themselves. However, some community members substitute local herbs for the ITNs due to apparent lack of financial resources to purchase the nets.

### **5.5. The contribution of health personnel towards the promotion of ITNs among pregnant women attending ANC**

This section reports on the relationship between literature and the strategies put in place for the promotion of ITN use among pregnant women through public health education in the community by health personnel. Three strategies were identified as presented below.

*Education on the importance of IT nets (Cues to Action)*

It would be recalled from chapter two that the concept of cues to action explains occasions, individuals, or things that move individuals to change their conduct (Graham, 2002). The findings disclosed that health personnel do give pregnant women education and sometimes find out whether they have the ITNs in their homes as part of strategies to check ITN usage. Besides, health professionals provide pregnant women with the nets and educate them on the importance of using them to prevent malaria and abortion of the foetus. A similar strategy is reported where a simple health promotion message administered by village midwives raised bed net usage in trial hamlets in North Shan State, Myanmar (Lin et al., 2000).

This also corroborates a study in Ratchaburi Province, Thailand (Sri-aroon, 1998, Rauyajin et al. 1998) which showed that the use of impregnated bed nets was significantly related to factors such as the receipt of information from malaria workers. The fact is that poor knowledge concerning the use of ITNs could lead to low level of actual use by women (Chukwuocha et al., 2010) and low level of education as reported by some studies (Wagbasoma & Aigbe, 2010; Baley & Deressa, 2008). This means that ITNs usage will be greater if the users are well educated on the relevance and implications for controlling malaria. This is confirmed by the fact that ITN use was significantly greater in participants who had received the educational intervention as against individuals who did not (Rhee, 2005).

*Distribution of IT nets to pregnant women*

The study found that health professionals carry out public health education on the use of ITNs in the community on a daily basis. Besides, the education is part of a broader package given to pregnant women attending ANC. This is done by demonstrating to pregnant women how to use ITN one on one basis when they come for consultation and

correcting the wrong impression held about ITN usage. Additionally, the services of community health nurses were also employed in providing pregnant women the education they need on the use of ITNs. Evidence available shows that local discourses and health workers' ideas and comments influenced concerns about malaria during pregnancy (MiP) interventions ( Pell *et al.*, 2011).

*Door to door community education on ITN usage*

The finding revealed that Community Health Nurses (CHNs) carry out the health education on ITNs in the communities and distribute the nets to pregnant women if they do not own one and/or were not using them. The implication is that when door to door distribution is carried out there is the likelihood that more and more pregnant women will use it in addition to getting more information as regard its usage. In households that received one or two additional door-to-door visits, the majority of respondents indicated that the volunteer provided new information regarding the use and importance of ITNs despite having received previous multiple visits (Desrochers *et al.*, 2014). A simple health promotion message administered by village midwives raised bed net usage to over 60% in trial hamlets in North Shan State, Myanmar (Lin *et al.*, 2000).

These also explain why the HB model suggests that media reports (Graham, 2002) mass communications campaigns, exhortation from others, update postcards from a medicinal services supplier (Mi, 2002) are cues that move individuals to change their conduct. Thus, the giving of education, distribution of ITNs and follow up by health personnel to pregnant women were 'cues' that move pregnant women to change their attitudes toward as well as perception of ITNs. This supports Weinrich *et al.* (1998)'s finding that knowing a kindred church member with prostate tumour is a noteworthy 'cue to action' for African-American men to go to prostate malignancy instruction programmes.

## **5.6. Challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC**

This section presents discussion of the findings and their relationship to literature with respect to the challenges facing health personnel in the promotion of ITN among pregnant women attending ANC. The findings revealed two important challenges.

### *Shortage of ITNs (self-efficacy)*

The literature in chapter two talks about an added component of the HBM as self-efficacy, which is the faith in one's own capacity to do something (Bandura, 1977). The study unravelled that Shortage as a result of government delay in ITN delivery is the main factor that impedes the work of health personnel in general and specifically, in the promotion of ITN use amongst pregnant women. This supports Chukwuocha et al. (2010)'s finding that the cost of ITNs followed by their non-availability were constraints to their use.

### *Lack of cooperation on Appropriate ITNs Usage*

The second challenge is that there is a lack of cooperation between health personnel and pregnant women on the appropriate use of the ITNs. A study found that challenges to the use and promotion of ITN by health workers were lack of conviction about the unique benefits of ITN, inadequate knowledge and poor access to the nets ( Iyaniwura *et al.*, 2008).

The above supports the idea of self-efficacy to the extent that individuals for the most part do not attempt to do something new unless they think they can do it (Bandura, 1977; Rosenstock et al., 1988).

### **5.7. Chapter summary**

This chapter has thematically, discussed the findings of the study as they relate to literature and the health belief model . The next chapter is a presentation of the summary, conclusions and recommendations of the study.



## CHAPTER SIX

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 6.0. Introduction

This chapter presents a summary of the study in relation to the objectives and draws conclusions based on the findings in section one. Section two presents the conclusions of the study. Section three presents the contributions that the study makes to knowledge. Section four is where the researcher has made some recommendations based on the findings of the study. Section five presents the limitations to the study. Finally, section six presents the directions for future research.

#### 6.1. Summary of the Study

The major goal of the study was to explore the perceptions and attitude towards ITNs in the control of malaria amongst pregnant women. This was achieved by using qualitative research methodology to elicit data from pregnant women (patients) attending antenatal clinic at La General Hospital in the La Dade Kotopon Municipality in the Greater Accra region. In all, thirteen participants, including 10 pregnant women and 3 health personnel were interviewed. The interviews were audio taped, transcribed and analysed using Nvivo software application and framework analysis. The findings formed the basis for the conclusions and recommendations made by the researcher, which are presented below.

#### 6.2. Conclusions

This research by and large achieved the research objectives and the key research questions were answered. However, even though this study attempts to understand the perception as well as attitude towards ITNs among pregnant women attending ANC at La General Hospital, there is still a great deal of work to be undertaken on this topic. The use of the Health Belief Model would have been better with quantitative study rather than a qualitative study. For instance, Watabane and colleagues explored perceptions and beliefs

about malaria and ITN use by taking into account the difference in the determinant of use of ITN according to the location and context. The HBM was used as a theoretical framework to capture the main constructs based on the significance of variables between Island and categorical variables. Analysis of Knowledge, attitudes and practices (KAP) survey was done to compare the differences between the categorical variables and continuous one. (Watanabe et al., 2014)

In this study ,most of the constructs identified matched with the theoretical framework as explained in the discussion(refer to chapter 5).The HBM has been used in other disciplines,including Sociology and Psychology (Hochbaum, 1958). Its application to the study on ITN or malaria intervention study is unique as well.The key conclusions of the study are presented below.

#### *Knowledge of ITN among pregnant women*

The study concludes that pregnant women attending ANC at La General Hospital indeed have appreciable knowledge of ITNs. In fact, the findings showed that pregnant women actually knew that ITN helps and protects them and their unborn baby against malaria. They also knew the purpose and importance of ITN and how it is used. This is a positive development towards the control of malaria among pregnant women. This conclusion also supports the study conducted among pregnant women in Enugu State in Nigeria, where the authors found that these women exhibited an overall ITN knowledge (Adogu & Ijemba, 2013).

#### *Attitude of pregnant women towards ITN*

Generally, the study concludes that with the exception of a few negative cases, almost all the respondents demonstrated good attitude towards ITN. The disposition to act with respect to ITN usage by pregnant women attending ANC at the La General Hospital was

largely positive. Similarly, the literature reports that pregnant women in a post conflict district in northern Uganda, said it was good to use ITN (Obol et al., 2014).

#### *Perception of ITN amongst pregnant women*

The study concludes and argues that pregnant women attending ANC at La General Hospital perceive that the ITN is better, comfortable and sleeping under it does not affect pregnancy, but rather prevents mosquito bite and contracting malaria as a result. Similarly, this conclusion buttresses Obol et al (2014)'s study, that about pregnant women in Northern Uganda perceived ITN as effective at preventing mosquito bites, which transmit malaria; and those who owned ITN were willing to continue using them.

#### *Influence of socio-cultural factors on ITN usage amongst pregnant women*

The study observed that socio-cultural factors do not influence the acceptance and use of ITN among the pregnant women attending ANC. However, the prevailing cultural practices to prevent mosquito bite and control malaria, among others, were to burn herbs, orange peels and palm nut. Similarly, this conclusion supports a study in Kassena-Nankana East and West Districts of Ghana, which also revealed that some respondents drink or use local herbs (e.g. Neem tree herbs) for controlling malaria instead of using bed nets (Azabre et al., 2006).

#### *Contribution of health personnel towards the promotion of ITNs*

The study concludes that health personnel do give pregnant women education and sometimes follow up to find out whether they own them in their homes as part of strategies to check ITN usage. Additionally, health professionals distribute the nets to the pregnant women and educate them on the importance of using them to prevent mosquito bite, associated malaria and abortion of the foetus. Moreover, health professionals carry out public health education on the use of ITNs in the community on daily basis. This is done by demonstrating to pregnant women how to use ITN on one on one basis when they

come for consultation and correcting the wrong impression held about ITN usage. Furthermore, services of community health nurses are engaged to provide education on the use of ITN to pregnant women in the communities. Similarly, the literature reports that a simple health promotion message administered by village midwives raised bed net usage in trial hamlets in North Shan State of Myanmar (Lin et al., 2000).

*Challenges facing health personnel in the promotion of ITN usage amongst pregnant women*

The study concludes that shortages as a result of government delay in ITN delivery were the main factor that impede the work of health personnel in the promotion of ITN use amongst pregnant women. Similarly, this conclusion supports Chukwuocha et al. (2010)'s study, that the cost of ITNs coupled with their non-availability were constraints to their use. The study argues that there is apparent lack of cooperation between health personnel and pregnant women on the appropriate use of the ITNs. Equally, this conclusion supports a study, which found that challenges to the use and promotion of ITN by health workers included lack of conviction about the unique benefits of ITN, inadequate knowledge and poor access to the nets (Iyaniwura et al., 2008).

### **6.3. Contribution to Knowledge**

The study makes some contributions to policy and practice, theory and methodology as explained below.

*Contribution to Policy and Practice*

The study contributes to policy and practice by revealing that health policy makers, implementors and health professionals have to take the perception and attitude of pregnant women into consideration when designing policy guidelines for the malaria control programme. It would be recalled that to ensure effective control of malaria, especially among pregnant women, the Government of Ghana through the sector Ministry of Health

and its implementing agency Ghana Health Service established policy guidelines for the implementation and scaling-up of the use of ITNs in accordance with the Roll Back Malaria Partnership (RBM) programme and has also developed a strategic framework to guide its implementation (Ghana Health Service, 2014).

In accordance with the framework, the malaria prevention programme in Ghana was expected to reduce malaria specific morbidity and mortality by 50% by the year 2010 (Ghana Health Service, 2014). However, evidence from this study may suggest that the objectives have not been achieved up to date. Therefore, the findings of this study may seem to suggest one of the several reasons for the setback in achieving such targets.

#### *Contribution to Theory*

The study also makes a theoretical contribution to knowledge by arguing that although the health belief model (HBM) has been applied largely to quantitative studies (Watanabe et al., 2014), its application in explaining the findings of this study has proved that it can be applied to qualitative studies as well. It has helped to elucidate on how and why pregnant women behave the way they do in response to the ITN intervention put in place to control malaria in Ghana (Ghana Health Service, 2014). In most cases, the study revealed that since the pregnant women perceive that there are benefits to be derived from using the ITN, it has encouraged them to accept and use it during pregnancy to the extent of thinking about it as providing safety for their unborn baby/babies.

#### *Contribution to Methodology*

The contribution of the study to research methodology is very significant. It could be argued that most of the studies examined in chapter two applied quantitative research method. However, this study is one of the few to have applied a qualitative research

methodology to collect data for analysis. Indeed, the qualitative interviews have helped to know and understand the way pregnant women perceive the ITNs through their own perspective and of a world in which they are a part (Silverman, 2006). Thus, it will be interesting for future studies to blend the two methodologies of qualitative and quantitative: mixed methods to collect data for analysis.

#### **6.4. Recommendations**

On the bases of the findings of this study, the following recommendations are made for consideration by policy makers and healthcare practitioners:

1. There is the need to focus on creating demand for ITNs through all available health information channels, including social marketing.
2. There is the need for the companies that design the Insecticide Treated Nets (ITNs) to improve upon the design and ensure that materials used provide comfort and allow for ventilation.
3. There is the need for health personnel to sustain continuous education at the antenatal clinic on the importance of using ITNs in malaria control and preventing the risk of anaemia, low birth weight of babies and death since education provides knowledge and leads to change in attitude and perception of ITNs usage.
4. There is the need for the Ministry of Health to ensure the availability of the ITNs at all health facilities.
5. There is the need for the Ghana Health Service to ensure that the malaria control policy is implemented and adhered to and also ensure that bed nets are distributed to health facilities on time to prevent delays and shortages.

### **6.5. Limitations to the Study**

The following limitations to the study can be addressed in future research:

1. The study was conducted to assess the perception as well as attitude towards ITNs usage amongst pregnant women attending antenatal at La General Hospital. Due to the study location, some of the responses expected were not given. This would have been different if the study was done in a rural setting. Another study can be conducted to explore the perceptions and attitude towards ITNs usage amongst pregnant women in a rural area.
2. The researcher could not go to the pregnant women's house(s) to interview them as well as to establish the real ownership and use. They were rather interviewed at the antenatal clinic of the La General Hospital. There might have been information bias as all the respondents said they were using the ITNs: meanwhile, they may not be using them at home. The effective way to confirm whether pregnant women use the ITNs or not, is to conduct the interview(s) at home and physically check if they have fixed them or not.
3. The overall findings are not generalizable to all health facilities in the La Dadekotopon Municipal area due to the fact that a phenomenology/case study produces data that can not be generalized. This means that, there could be sampling bias. (Creswell, 2007). There is the need to apply quantitative research method and extend the study to cover many ANCs in other hospitals in the Greater Accra region.

### **6.6. Future Research**

The following are suggested for future research endeavours as a way of rectifying the limitations to this study:

1. There is the need for experimental studies (clinical trials) to be done on certain herbs used in controlling malaria: to ascertain their efficacy.
2. There is the need to apply quantitative research method, increase sample size and extend the study to cover many ANCs in other hospitals in the Greater Accra region. This will help rectify some if not all the sampling bias(es) in the study.



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## APPENDICES

### Appendix A: Semi-structured interview guide for pregnant women

School of Public Health  
College of Health Sciences  
University of Ghana

The purpose of this study is to explore the perceptions and attitude of ITN amongst pregnant women attending antenatal clinic at La General Hospital in the La Dadekotopon Municipality. The findings will help to improve service delivery at the ANC. Your response and contribution will be used for academic purposes and no disclosure will be made to any third party. However, you are allowed to discontinue this interview at any stage. Thank you.

Explore the following:

Demographic information.

#### Objective 1: Knowledge of ITN amongst pregnant women

- Could you please explain to me what you understand about ITN and its importance to you as a pregnant woman?
- Could you please indicate to me what you know about ITN and how it will help you to prevent malaria during this time of pregnancy?

#### Objective 2: Attitude of ITN amongst pregnant women

- Could you please indicate to me how you react to the use of ITN as a means of helping you to prevent malaria during pregnancy?

#### Objective 3: Perception of ITN amongst pregnant women

- Could you please discuss with me your perception of the use of ITN to prevent malaria during pregnancy?

- How do community members perceive the use of ITNs?

**Objective 4: The influence of socio-cultural factors on ITN amongst pregnant women**

- Could you please narrate to me how socio-cultural factors influence your acceptance and use of ITN?
- How do the culture and traditions of the people in the community affect the use of ITNs?



**Appendix B: Semi-structured interview guide for nurses**

**School of Public Health  
College of Health Sciences  
University of Ghana**

The purpose of this study is to explore the perceptions and attitude of ITN amongst pregnant women attending antenatal clinic at La General Hospital in the La Dadekotopon Municipality. The findings will help to improve service delivery at the ANC. Your response and contribution will be used for academic purposes and no disclosure will be made to any third party. However, you are allowed to discontinue this interview at any stage. Thank you.

Explore the following:

Demographic information.

**Objective 5: Contribution of health personnel towards the promotion of ITN amongst pregnant women**

Could you please explain to me some of the strategies put in place to ensure effective promotion of the use to ITN among pregnant women who access your services?

How do you carry out public health education on the use of ITNs in the community?

**Objective 6: Challenges facing health personnel in the promotion of ITN usage amongst pregnant women**

Would you please discuss with me some of the factor that impede your work in general and specifically, the promotion of ITN use amongst pregnant women?

What are the key challenges facing pregnant women in their acceptance and use of ITNs?

## **Appendix C: Participant's consent form**

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University of Ghana**

Research Topic: The Perceptions and attitude of Insecticide Treated Nets Amongst Pregnant Women Attending Antenatal At La General Hospital.

### **Introduction**

I am a student from the University of Ghana, School of Public Health. My assistants and I are carrying out a study on Assessment of Insecticide Treated Nets amongst pregnant women attending antenatal at La General Hospital.

We are very happy to invite you to take part in the study. We would be grateful if you could kindly read this consent or let someone read it to you so that you can decide taking part in the study or not.

You will only participate once in this study. Though by taking part in this study, you would not have any immediate and direct benefits; your responses will provide useful information for the improvement in use of ITNs. The information will be used for academic purposes.

In accepting to take part in this study the discomforts that you may have are mainly your time taken to answer the questions.

### **Confidentiality**

Your participation in this study is voluntary. All the information will be kept confidential and the data will be stored in locked cabinet. Access will be limited to only the researcher and research supervisor. Your name, identity are not needed for the study. We assure you that your name shall not be mentioned in any report that might come out from this study.

**Participant's Consent**

I have read the foregoing information/ the foregoing information has been read to me or translated to me and I have fully understood it.

I consent voluntarily to participate in this study.

(Name and signature of a witness should be provided in a case where the participant cannot speak or read English)

Signature/thumbprint: \_\_\_\_\_

Name of witness: \_\_\_\_\_

Signature/thumbprint of witness: \_\_\_\_\_

**Interviewer's Statement**

**I, the undersigned (Mary Anita Quist), have explained this consent form to the participant in simple language that she/he understands, clarified the purpose of the study, procedures to be followed as well as the risks and benefits involved. The participant has freely agreed to participate in the study.**

Signature of interviewer .....

Date ..... / ..... / .....

**Address**

**Mary Anita Quist**

**P O Box 6**

**Trade Fair – La**

**Accra.**

Telephone number: 0261516484

Email address: naaq2002@yahoo.com

In case of any concern you can contact the Ethics Administrator, **Miss Hannah**

**Frimpong, GHS/ERC on: 0243235225 / 0507041223.**

**Appendix D: Summary of data collection techniques and analytical framework**

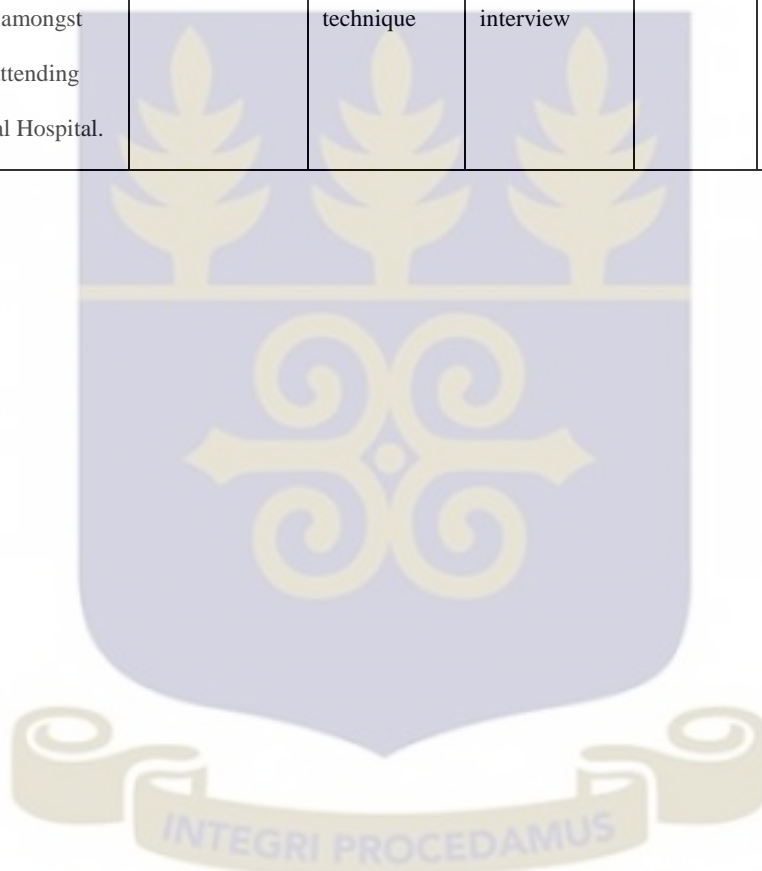
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The analytical framework below would be used in the study to guide the researcher in the selection of research data collection methods and analytical tools.

**Appendix D: Summary of data collection techniques and analytical framework**

No	Specific Objectives	Themes	Sampling Procedure	Data Collection Techniques	Tools	Source of Data	Type of Data Analysis
1.	To assess the of ITN amongst pregnant women attending ANC at La General Hospital	Knowledge f ITN usage	Purposive sampling technique	Semi-structured interview	Nvivo software	interviews	Framework analysis
2	To explore the attitude of pregnant women attending ANC at La General Hospital towards ITN.	Attitude towards ITN usage	Purposive sampling technique	Semi-structured interview	Nvivo software	Interviews	Framework Analysis
3	To assess the perception of ITN amongst pregnant women attending ANC at La General Hospital.	Perception of ITN	Purposive sampling technique	Semi-structured interview	Nvivo software	Interviews	Framework Analysis
4	To explore the influence of socio-cultural factors on ITN amongst pregnant women at La General Hospital.	Norms, traditions, and stigma	Purposive sampling technique	Semi-structured interview	NvIvo software	interview	Framework Analysis

To identify the contribution of health personnel towards the promotion of ITN amongst pregnant women attending ANC at La General Hospital.	Attitudes, local discourses and health workers ideas and comments	Purposive sampling technique	Semi-structured interview	NvIvo software	interview	Framework Analysis
To identify challenges facing health personnel in the promotion of ITN amongst pregnant women attending ANC at La General Hospital.	Challenges	Purposive sampling technique	Semi-structured interview	NvIvo software	Interview	Framework Analysis



**Appendix E: Sample of data extracts to illustrate qualitative themes that emerged from analysis**  
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**Appendix E: Sample of data extracts to illustrate qualitative themes that emerged from analysis**

<b>THEME:</b> Knowledge of ITN amongst pregnant women	<b>THEME:</b> Positive and negative aspects of Attitude towards ITN amongst pregnant women	<b>THEME:</b> Positive and negative aspects of Perception of ITN amongst pregnant women	<b>THEME:</b> Contributory factors of health personnel in promoting ITN amongst pregnant women.	<b>THEME:</b> Challenges facing health personnel in promotion of ITNS	<b>THEME:</b> Socio-cultural factors influencing ITNs
.Prevent us from getting malaria when we use it.	<b><u>POSITIVE</u></b> .Good to use it	<b><u>POSITIVE</u></b> . If I Sleep under it I feel better and well.	. Nurses educate on importance and use of nets.	.Non-availability of ITNS	.Do not know of socio-cultural influence on ITNs
.Protects us from mosquito bite.	<b><u>NEGATIVE</u></b> .It is very warm to use it.	.I feel comfortable when sleeping under it and did not get malaria.	.They distribute the nets to pregnant women and demonstrate how to fix or hang the nets.	.Shortages of ITNs	.Ethnic groups or religion does not influence ITN.
.For controlling malaria	.Not using it	.I feel good and chemicals do not affect pregnancy when using it	. Nurses educate them on the importance of using the nets in preventing malaria and abortion of foetus.	.Delays in supply of ITNs	.I use mosquito coil to prevent mosquitoes because the room is small so could not hang net to sleep under it.
.No knowledge about ITNs  It prevents us and the baby in the womb from getting malaria.		<b><u>NEGATIVE</u></b> .It's very hot when using it	.Community health nurses carry out the health education of ITNs in the community and distribute the nets to pregnant women if they find out they do not own one and using them.	.Poor pregnant women do not have money to purchase ITNs when there is shortage. <b><u>CHALLENGES OF PREGNANT WOMEN IN ACCEPTANCE AND USE OF ITNS</u></b> .Some pregnant women dislike the nets so they do not use them.	.Socio-cultural factors do not influence some pregnant women. .my room is small so I can not fix the net
.By sleeping under the net prevents		.I feels uncomfortable	. Community nurses visits	.Some of them do not use the nets	.Culture and behavior does not

malaria		when using it.	pregnant women, educate them on ITNS and inspects their houses if they own nets and they are using them.	because they feel warm and uncomfortable when sleeping under them.	influence my acceptance in use of ITNS.
.By fixing the net around the bed protects you from mosquito bite to prevent malaria  —		. Don't have any perception about it.  Community members perceives ITNs causes bodily itchininess and uncomfortable to use during pregnancy.	.Nurses gives health talk to pregnant women on how to use ITNs to prevent malaria and getting anaemia.  .Nurses educate them on several health topics including care during pregnancy, delivery and postnatal.	.Some of the pregnant women said they do not have mosquitoes in their rooms so they don't use the nets.	.Not heard about socio-cultural factors influencing pregnancy.  <b><u>EFFECTS OF CULTURE AND TRADITIONS ON ITNs IN THE COMMUNITY</u></b>
.By hanging the net and sleeping under the net protects from mosquito bite to prevent malaria.		. Some community members feel heat, hot or warm when sleeping under the net.			. Some people in the community burn herbs to control mosquito bite.
		.Perceives the chemicals used in nets will affect the pregnancy by causing abortion			.Some people also burn peels of orange and dried palm nut chaff to control mosquito bite.
		.Some feels bodily itchininess when they come into contact with the nets.			.Some people use herbs to control malaria
		<b><u>POSITIVE</u></b> . Some community members like using the nets. They do not feel bodily itchininess when they dry the nets before sleeping under them.			. I have not heard of effects of culture and traditions on ITN usage. I have no idea about it.
		.They do not have any perception about it.			

**Appendix F: List of participants and date(s) of interview**

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University of Ghana**

The list below shows the participants and date that the interviews were conducted with each of them.

**Appendix F : List of participants and date(s) of interview**

<b>Participant / Code</b>	<b>Age (yrs)</b>	<b>Educational background</b>	<b>Date of interview</b>
Pregnant W1	18	Primary	21-05-2015
Pregnant W2	27	JHS	21-05-2015
Pregnant W3	25	Primary	21-05-2015
Pregnant W4	38	Primary	21-05-2015
Pregnant W5	31	JHS	21-05-2015
Pregnant W6	21	JHS	21-05-2015
Pregnant W7	24	Primary	21-05-2015
Pregnant W8	25	Secondary	21-05-2015
Pregnant W9	27	JHS	21-05-2015
Pregnant W10	32	Secondary	21-05-2015
Nurse 1	27	Tertiary	21-05-2015
Nurse 2	35	Tertiary	21-05-2015
Nurse 3	28	Tertiary	21-05-2015
Total	13		

Source: Researcher's Fieldwork, 2015