

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

CONTROLLING MALARIA IN PREGNANCY:
INVESTIGATING THE FACTORS THAT INFLUENCE THE UPTAKE OF
INTERMITTENT PREVENTIVE TREATMENT SERVICES IN THE NZEMA-EAST
DISTRICT, GHANA

BY

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THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH,
SCHOOL OF MEDICAL SCIENCES, COLLEGE OF HEALTH SCIENCES, KWAME
NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY IN PARTIAL
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER
SCIENCE DEGREE IN HEALTH EDUCATION AND PROMOTION

MARCH 2009

DECLARATION

Candidate's Declaration

I hereby declare that except for reference to the works of other authors, which have been duly cited, this thesis is the true results of my own research work and that it has neither been wholly or partly presented in this University or else where.

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DEDICATION

To my lovely twin daughters, Nana Ama Acquah and Ewura Ama Acquah

And

My wife Jennifer Tevie

ACKNOWLEDGEMENT

A project of this nature is a considerable undertaking. I have learnt much and benefited a great deal working with an army of health workers, volunteers and pregnant women in Nzema-East District

I give my heartfelt thanks to my supervisor, Dr. Harry Tagbor for his financial support and constructive criticism anytime I called on him.

My sincere thanks also go to the staff at the Nzema-East District Health Administration, particularly, the District Director of Health Services, Dr. Abraham Tachie-Menson, and the Diseases Control Officer, Hope Gokpe, for gladly accepting me into their offices and working with me throughout the data collection period.

Finally, I thank my friend at the College of Architecture and Planning, Mrs. Catherine Emelia Enchill, who helped print the work, and all health workers, volunteers and pregnant women who participated in this study.

DEFINITION OF TERMS

Primigravidae	a woman pregnant for the first time
Secundigravidae	a woman pregnant for the second time
Postpartum	period after labour
Parity	number of previous pregnancies

ABBREVIATIONS

ANC	Antenatal clinic
CI	Confidence Interval
DHA	District Health Administration
DHMT	District Health Management Team
HIV	Human Immunodeficiency Virus
IPT	Intermittent Preventive Treatment
ITN	Insecticide Treated Nets
OR	Odds Ratio
RBM	Roll Back Malaria
SP	<i>Sulfadoxine-pyrimethamine</i>
TBA	Traditional Birth Attendant

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ABSTRACT

To help reduce the burden of malaria in pregnancy, the Ministry of Health introduced the intermittent preventive treatment (IPT) programme with *Sulfadoxine-pyrimethamine* (SP) for pregnant women as a national policy in 1999.

Nine hundred women from fifty communities in the Nzema-East District were sampled in a cross-sectional household survey in August, 2008 in this study to determine the factors that influence the uptake of IPT services.

Majority of the women, 95.1%; CI [93.6 – 96.4] had an encounter with the ANC during their last pregnancies. More than half, 52%; CI [47.7 – 54.3] of the women had their first ANC encounter in the first trimester, and 57.3%; CI [53.8 – 60.2] made four or more visits to the ANC before delivery. Even though ANC attendance was high, only 47.2%; CI [43.1 - 50.8] of the 641 women who took SP as IPT had three doses. Women who lacked formal education were more likely not to have complete IPT (OR 1.5; CI 1.23 – 1.69). Employment, marital status, educational level, number of ANC visits and gestational age at first ANC visit were significant predictors of IPT uptake ($p < 0.05$).

Education on the benefits of IPT for the woman and the unborn child, and the negative consequences of malaria in pregnancy should be emphasised at ANC sessions. There should be conscious effects to ensure continuous supply of SP to health facilities. Community health workers should be trained to administer SP at the community level.

CHAPTER ONE

1.1 INTRODUCTION

In this chapter, the background to the study, problem statement, rationale of the study, the conceptual framework, the objective of the study and the profile of the study area are reviewed.

1.2 BACKGROUND

Malaria, together with HIV/AIDS and TB, is one of the major public health challenges undermining development in the poorest countries in the world. Today approximately 40% of the world's population, mostly those living in the world's poorest countries is at risk of malaria (WHO/UNICEF 2003). Malaria is found throughout the tropical and sub-tropical regions of the world and causes more than 300 million acute illnesses and at least one million deaths annually (WHO/UNICEF 2003).

Recent estimates of the global malaria burden have shown increasing levels of malaria morbidity and mortality, reflecting the deterioration of the malaria situation in Africa during the 1990s. About 90% of all malaria deaths occur in Africa south of the Sahara, and the great majority of them in children under the age of five - Malaria kills an African child every 30 seconds (WHO/UNICEF 2003).

Pregnant women and their unborn children are particularly vulnerable to malaria (Brabin 1983). This is because pregnancy reduces the pregnant women's immunity to malaria;

making them more susceptible to malaria infection; increasing their risk of illness, severe anaemia, spontaneous abortion, etc. Pregnant women may be infected with malaria parasites even if they show no symptoms. These silent infections can have devastating effects on the development of the unborn child. Thus malaria infection in pregnancy is associated with high risk of both maternal and perinatal morbidity and mortality.

Malaria is one of the leading causes of morbidity and mortality, especially among pregnant women and children under the age of five. In Ghana, malaria accounts for 25% of the deaths in children under the age of five years, 13.8% and 10.6% of OPD attendance and admissions respectively among pregnant women and 9.4% of maternal deaths (GHS 2001). The Ministry of Health estimates that over the past ten years, there have been 2 – 3 million cases of malaria each year, representing 40% of outpatient cases, while severe malaria accounts for 33 – 36 percent of inpatient cases (GSS 2003).

Controlling the effects of malaria infection in the pregnant woman and her foetus requires a balanced programme of effective case management of malaria illness and prevention of the consequences of asymptomatic infections. These interventions consist of the use of intermittent preventive treatment (IPT), insecticide treated nets (ITN) and the effective case management of the illness.

Intermittent preventive treatment (IPT) helps clear malaria parasites present in the placenta to allow easy transport of oxygen and nutrients. Intermittent preventive

treatment (IPT) with *Sulfadoxine-pyrimethamine* (SP) for malaria has been shown to increase both maternal haemoglobin levels and the infant's birth weight (Parise et al. 1998; Hommerich et al. 2007). IPT is to be administered to all asymptomatic pregnant women who report at the antenatal clinic in their 2nd and 3rd trimesters (GHS 2003).

Despite the fact that all health facilities that offer ANC services have been providing IPT services since its introduction, there has not been any study to find out the coverage and impact of the service in the Nzema-East District. IPT coverage is woefully less than the internationally accepted standard. The current goal is to achieve at least 80% of women receiving two doses of IPT during pregnancy. Besides the low coverage of IPT, there is a consistent drop in the number of women who take the first dose (IPT₁) and the number who take the second dose (IPT₂)¹. This has the potential of preventing many pregnant women and their unborn babies from deriving the protection that IPT administration is thought to provide for women and foetus during pregnancy.

1.3 PROBLEM STATEMENT

Due to the heavy burden that malaria exerts on pregnant women and their infants, and the serious debilitating consequences it can have on the foetus in particular, various policies have been implemented at both international and national levels to control the disease. The World Health Organisation (WHO) adopts the Roll Back Malaria (RBM) strategy in the prevention and management of malaria. The RBM strategy recommends a package of interventions for the control of malaria during pregnancy in areas with stable (high) transmission. The three-pronged strategy include the use of insecticide

¹ Personal communication with the Diseases Control Officer, Nzema-East District

treated net (ITN), intermittent preventive treatment (IPT) and effective case management of malaria and anaemia.

These strategies have been adopted by Ghana's Ministry of Health (MoH). Since 1999, Ghana has been involved in this international effort to control malaria under the Roll Back Malaria (RBM) initiative. The objectives of this initiative are to ensure that by the year 2005 at least 60 percent of those at risk of malaria, particularly pregnant women and children less than five years, have access to the most suitable and affordable combination of personal and community protective measures such as insecticide treated mosquito nets (ITNs) and prompt, effective treatment for malaria. As well as to ensure that at least 60 percent of all pregnant women who are at risk of malaria, especially those in their first pregnancies, have access to chemoprophylaxis or intermittent preventive treatment (IPT).

To date however, there has been limited assessment of the implementation of this policy in rural areas where the greatest burden of malaria is found. There is therefore the need to ascertain the factors that affect the uptake of IPT in the district. This study therefore seeks to assess the factors that influence the uptake of IPT services among pregnant women in the Nzema-East District.

1.4 RATIONALE

Key health-care interventions to promote maternal health are available but the utilisation of such interventions is limited in developing countries, and varies between population

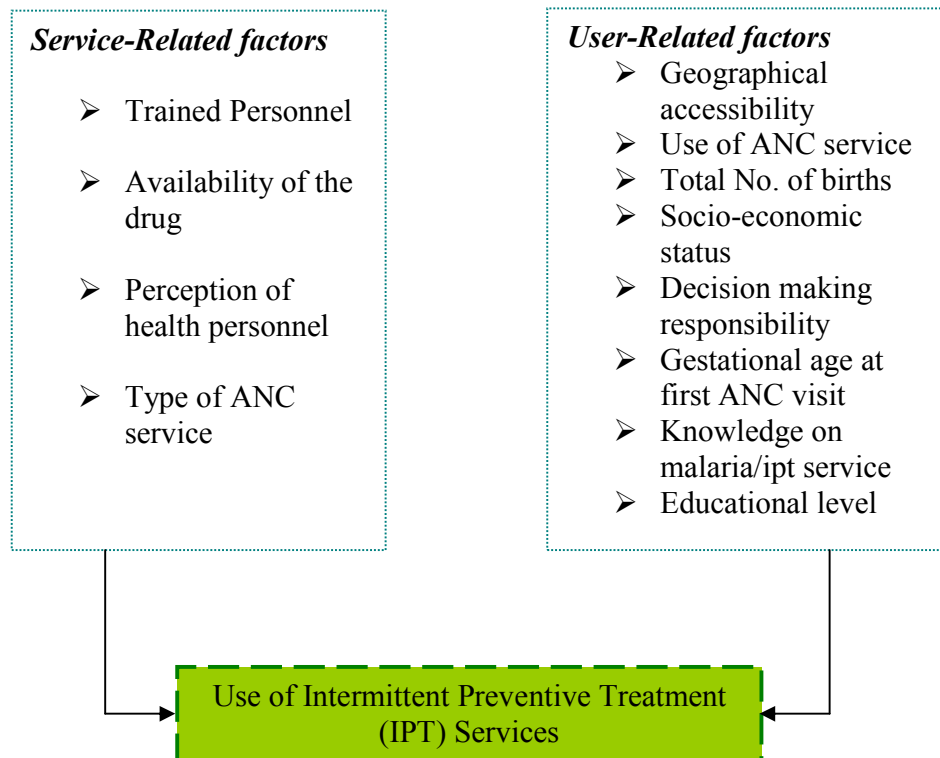
groups. One such intervention is the use of SP as IPT for malaria among pregnant women. The IPT policy aims at controlling the risks that malaria presents to the mother, her foetus and the neonate.

Several factors have been identified to influence the delivery of IPT to pregnant women. The interaction of these multiple factors impact on the delivery of the service. The rationale for this study is to unmask how these multiple factors interact and affect the delivery of IPT services in the district. The results from the study, it is believed, will help in contributing to improving the delivery of IPT services by highlighting the factors that significantly influence the delivery of the service in the district, and suggest ways in which their interactions can be managed to maximise the coverage of the service in the district.

The study may also generate new information on the implementation of IPT, which can be extended, replicated and modified to the study of other health services.

1.5 CONCEPTUAL FRAMEWORK

Figure 1: A conceptual framework of factors that influence uptake of IPT services



Source: Author, August, 2008

The conceptual framework depicted in the figure 1 provides a framework for understanding the potential factors that influence the use of the IPT services. The framework suggests that the utilisation of IPT services is a function of systemic or service-related and user-related factors. These factors either facilitate or impede the utilisation of IPT services by pregnant women. The purpose of the framework therefore is to explain the conditions that influence the uptake of IPT services.

The service-related factors are those factors inherent in the health delivery system that are thought to affect the implementation of the IPT service. Among these factors are the type of ANC services that are rendered by the health services providers. Where ANC services are given only at health facilities, pregnant women who do not make contact with the health facilities will not access IPT service. Again, the availability of the recommended drug, SP, at the health facility all the times is also crucial. IPT is not administered within the first sixteen weeks of gestation as well as after 36 weeks. Therefore pregnant women who visit the ANC only during these periods will not get the service. Also, if the pregnant woman visits the ANC during the period when they are suppose to take the drug, but there is shortage of the drug in the facility, they will still not get the service. The knowledge of ANC staff on IPT and its implementation as well as their perception of the IPT programme also influence the uptake of the service.

The user-related factors that may influence IPT uptake are; the number of times the woman has given birth, educational level of the woman, the woman's awareness of the service and the gestational age of the pregnancy at first ANC visit. The others include,

the number of ANC visits during pregnancy, geographical location of the user in relation to the health facility, user's socio-economic background and decision making responsibility.

1.6 RESEARCH QUESTIONS

The following research questions were addressed by the study;

- 1) What is the coverage of ANC service in the District?
- 2) What is the coverage of IPT service in the District?
- 3) What factors affect the uptake of IPT service?
- 4) Are the health facilities prepared in terms of IPT implementation?

1.7 GENERAL OBJECTIVE

The principal objective of the study was to assess the factors that influence the uptake of IPT among pregnant women in the district.

1.8 SPECIFIC OBJECTIVES

The specific objectives of the study were:

1. To determine the coverage of ANC attendance in the District
2. To determine the coverage of IPT uptake in the District
3. To establish whether there is an association between uptake of IPT and the following;
 - a. parity
 - b. educational level
 - c. distance between place of residence and health facility

- d. use of ANC service
 - e. gestational age at first ANC visit and
 - f. knowledge on the effects of malaria and its control measures
4. To find out whether health facilities have the required resources for IPT implementation.
 5. To make recommendations to the appropriate agency for implementation.

1.9 PROFILE OF THE STUDY AREA

The Nzema-East district is situated on the south-western portion of the Western Region of Ghana. It stretches from the coastal belt in the south to the tropical rainforest in the north. It covers an area of about 2201km² (9.2% of the total land area of 23921km² of the Western Region). It is bounded on the west by the Jomoro district, on the east by Ahanta-West and Wassa-West districts, on the north by Amenfi-West and the south by a 70km stretch of the sandy beach of the Gulf of Guinea.

The total population of the Nzema-East is 172,258 (a projection from the 2000 population and housing census) with a female population of 85,078. The literacy rate is very low. The district is predominantly rural with about 26.6% of the population dwelling in urban areas. Table 1 shows the distribution of the district population.

The majority of the population dwells in the rural areas with the following as major towns; Axim, the district capital, Esiama and Aiyinase. These towns have population densities above the district average of 95.1. The northern part of the district is virtually

cut from the southern part due to the poor nature of the roads that link communities in those parts to the south. Consequently, communication by way of road transport is extremely very difficult as the cost of travelling is relatively high in terms of time and money.

Table 1: Population distribution in Nzema-East District. Ghana

Age Range	Male	Female	Total
Less than 1yr	879	896	1,774
1 – 4	14,728	14,590	29,318
5 – 14	38,207	36,140	74,347
15 – 44	29,559	30,472	60,032
45 – 64	3,238	2,481	5,719
65+	568	500	1,068
Total	87,180	85,078	172,258

Source: DHA²

The inhabitants of the district are predominantly Christians – 79.3%. Some 7.3% are Moslems, with 2.2% being traditionalists. The rest of the population (11.2%) belong to some other unknown religions or are without any religious affiliation.

The predominant ethnic group is Akan with some 88.7% of the population. Ewe, Ga Adangbe, and Mole-Dagbon constitute 3.6, 2.6, and 3.6 percent of the population respectively.

Most of the adult populations are fishermen, farmers or petty traders. The farmers cultivate cash crops like cocoa, oil palm and coconut. Food crops such as cassava, plantain, and cocoyam are also grown in the District mainly on subsistence basis.

² Programme of Work 2006; DHA, Nzema-East District

The district consistently attracts many migrant fishermen and farmers during the peak fishing and cocoa seasons. Cocoa farming in the northern sector of the district attracts people from all over the country. Other minor activities such as small and medium scale mining attract people to the district.

The district is partly in the tropical rainforest belt with the southern part essentially consisting of shrubs and grass. It experiences rainfall throughout the year with the peak monthly aggregate occurring in May and June. Annual mean rainfall is about 1200mm. Annual temperature ranges from a minimum of 24° to a maximum of 29°. The temperature fluctuates within narrow limits in different months and the relative humidity is high throughout the year which reduces the rate of evaporation. The area receives the benefit of both south-west and northeast monsoons.

The rich natural environment has been degraded by human activities such as logging, sand winning and small scale mining. Much of the rich top soil and tropical rainforest has been denuded giving way to less fertile soil and secondary forest. The activities of small scale miners have also led to the pollution of water bodies in the various parts of the District. Most of these activities have modified the physical environment and increased the capacity of mosquito breeding sites making the environment conducive for the breeding mosquitoes and transmission malaria. The magnitude of the mosquito menace and prevalence of malaria in the District is as a result of various factors such as developmental activities, human interference, climatic changes, and availability of parasitic load in the community as well as socio-cultural practices.

Waste management is a major problem in the District. There is no underground sewerage disposal system for even the District capital and therefore sewerage disposal is a big dilemma. In most parts of the District, there is no drainage system. In the few places where there are drainage systems, the drains are not covered and dumping of garbage in the drains is very common. Mosquitoes breed mainly in these drains, cesspits and cesspools containing domestic effluents. Such habitats are extensive and diverse and are common in the area. This is due to insanitary conditions and environmental degradation.

Inadequate housing, sanitation and waste management facilities, as well as knowledge, attitudes and practice of the people are the major factors responsible for the proliferation of mosquitoes in the environment.

1.10 HEALTH CARE SITUATION

Health care in the Nzema-East district is rendered through a network of health institutions run by the government, mission and private organisations, with a large contingent of government practitioners and 140 Traditional Birth Attendants (TBA) spread all over the District. The services provided by these health facilities include reproductive and child health services, curative medical and surgical care, health education, promotion and prevention services, and disease control and nutrition services. Emergency obstetric services in the District are mainly provided at the two hospitals; Saint Martin De Porres and the government hospitals at Eikwe and Axim respectively. However, all the health centres and the CHIP zones in the district provide some form of maternity services.

The number one cause for outpatient morbidity as well as the major cause of admissions and deaths in Nzema-East is Malaria³.

³ Programme of work 2006; DHA, Nzema-East

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, literature on the topic of study is reviewed. The chapter shows the overview of malaria in Africa, the problem of malaria infection in pregnancy and current control and prevention strategies for malaria in pregnancy.

2.2 MALARIA IN AFRICA

Malaria is a life-threatening parasitic disease transmitted by mosquitoes. It was once thought that the disease came from fetid marshes, hence the name *mal aria* (bad air). In 1880, scientists discovered the real cause of malaria; a one-cell parasite called *plasmodium*. The parasite was later discovered by scientists to be transmitted from person to person through the bite of a female *Anopheles* mosquito, which requires blood to nurture her eggs.

Recent estimates of the global malaria burden have shown increasing levels of malaria morbidity and mortality, reflecting the deterioration of the malaria situation in Africa during the 1990s. About 90% of all malaria deaths occur in Africa south of the Sahara, and the great majority of them in children under the age of five years. Malaria kills an African child every 30 seconds (<http://www.rbm.who.int>). Around 90% of these deaths occur in Africa, mostly in young children. Malaria is Africa's leading cause of under-five

mortality (20%) and constitutes 10% of the continent's overall disease burden. It accounts for 40% of public health expenditure, 30-50% of inpatient admissions, and up to 50% of outpatient visits in areas with high malaria transmission (<http://www.rbm.who.int>).

The vast majority of malaria deaths occur in Africa, south of the Sahara, where malaria also presents major obstacles to social and economic development. Malaria has been estimated to cost Africa more than US\$ 12 billion every year in lost GDP (<http://www.rbm.who.int>)

Together with HIV/AIDS and TB, malaria is one of the major public health challenges undermining development in the poorest countries in the world. Today approximately 40% of the world's population, mostly those living in the world's poorest countries is at risk of malaria (<http://www.rbm.who.int>). It is found throughout the tropical and sub-tropical regions of the world.

2.3 MALARIA INFECTION IN PREGNANCY

Malarial infection during pregnancy is a major public health problem in tropical and subtropical regions throughout the world. In most endemic areas of the world, pregnant women are the main adult risk group for malaria. The burden of malaria infection during pregnancy is caused chiefly by *Plasmodium falciparum* (the most common malaria species in Africa).

Malaria infection during pregnancy results in a wide range of adverse consequences for the pregnant woman, the developing foetus and the newborn infant. The symptoms and complications of malaria during pregnancy differ with the intensity of malaria transmission and thus with the level of immunity the pregnant woman has acquired.

Consequently, the effects of malaria infection on the mother may range from negligible to severe, depending on the level of immunity to malaria infection that the mother has acquired prior to pregnancy and the efficacy of these immunity responses during her pregnancy (Steketee et al. 1996). Pregnant women, particularly primigravidae and secundigravidae, are especially vulnerable to malaria and are more likely to have *P. falciparum* infections than non-pregnant women (Brabin 1983). This is because pregnancy reduces their immunity to malaria, making them more susceptible to malaria infection, increasing the risk of illness, maternal anaemia spontaneous abortion, pre-term labour, stillbirths, placental infection and maternal mortality from severe anaemia (Brabin 1983; McGregor et al. 1983; Steketee et al. 2001).

Their unborn children are also vulnerable to malaria. Pregnant women may be infected with malaria parasites even if they have no symptoms. These silent infections can have devastating effects on the development of the unborn child. Malaria parasite invades the placenta and causes changes that impede oxygen-nutrient transfer. This may lead to foetal anaemia, premature delivery, congenital infection (rarely), intra-uterine growth retardation, intra-uterine foetal death, low birth weight (Brabin 1983; McGregor 1987; Steketee et al. 2001), and infant death (McCormic 1985).

The issue of malaria during pregnancy is important because each year over 30 million pregnancies occur among women living in malaria endemic regions of Africa (WHO/UNICEF 2003). Despite the burden that malaria exacts on pregnant women and their infants, until recently, malaria was a relatively neglected problem, with less than 5% of pregnant women having access to effective interventions.

In Ghana, malaria is one of the leading causes of morbidity and mortality, especially among pregnant women and children under the age of five (GSS 2003). Malaria accounts for 13.8% of OPD attendance, 10.6% of admissions and 9.4% of deaths among pregnant women in Ghana. The Ministry of Health estimates that over the past ten years, there have been 2 – 3 million cases of malaria each year, representing 40% of outpatient cases, while severe malaria accounts for 33 – 36 percent of inpatient cases. Malaria accounts for 25% of the deaths in children under the age of five (GHS 2001).

The promising news is that during the past decade, potentially more effective strategies for the prevention and control of malaria in pregnancy have been developed and demonstrated to have a remarkable impact on improving the health of mothers and infants. These preventive and control measures include the use of intermittent preventive treatment with SP, the use of insecticide treated nets and the effective case management.

2.4.1 COVERAGE OF ANTENATAL CARE SERVICES

It has been documented that across Africa, an average of 70% of pregnant women attend antenatal clinic at least once, and many, at least twice (WHO/UNICEF 2003). Ghana's

Ministry of Health policy guidelines of 1994 recommends a schedule of a minimum four ANC visits, in which a complete antenatal care package can be delivered appropriately. According to this recommendation, a woman with an uncomplicated pregnancy is expected to make ANC visits; once in each of the first and second trimesters, and twice in the 3rd trimester.

The current antenatal care package includes: health education and counseling on pregnancy and emergency preparedness, nutrition, hygiene, birth plan, postpartum care, breast feeding, sexually-transmitted infection prevention and family planning. It also involves antenatal examinations, intercurrent disease treatment, routine screening for syphilis, voluntary counseling and testing for HIV, prevention of mother to child transmission of HIV, periodic deworming, nutrition supplementation and tetanus immunisations.

Antenatal clinic visits therefore present a unique opportunity to address the psychosocial and medical needs of pregnant women and can provide essential services for all pregnant women. Antenatal clinic visit provide an opportunity for monitoring of maternal and foetal health, health education and counseling, delivery of IPT, prompt diagnosis and treatment of malaria and the provision of micronutrient supplementation. The periodic health examinations at antenatal clinic visits allow pregnant women to make contact with the healthcare system. At such encounters health education can be individualised and women can be screened for potential risk factors and danger signs. For this reason malaria prevention for pregnant women has to target the antenatal clinic as the site for

accelerated programme implementation of malaria prevention and control during pregnancy. However, a lot of the people, particularly the rural poor, may not encounter the ANC system during pregnancy due to a lot of reasons. All these people are also at risk of malaria and need to get access to malaria control interventions.

Nevertheless, Hill and Kazembe (2006) have observed that, high ANC attendance alone is not sufficient to ensure high IPT coverage. They argue that staff shortages, poor drug supply, poor ANC access and poor health worker practices are some of the operational challenges in the delivery of IPT. A number of studies have pointed out that high ANC attendance may not necessarily lead to high IPT uptake. In a study in Kenya, Guyatt et al. (2004) observed that even though 96% of ANC providers were aware of IPT and 74% of women visited ANC at least twice, only 5% of the women received two or more doses of SP as IPT. In a related study in Kenya, van Eijk et al. (2005) reported high ANC attendance albeit complete IPT coverage was only 6.8%. These studies show that, though high ANC attendance may promote IPT uptake, it is not the only factor that affect IPT utilisation. This study will explore factors that influence the uptake of IPT services.

2.4.2 COVERAGE OF IPT SERVICES

The most promising preventive approach using antimalarial drugs for pregnant women is intermittent preventive treatment. The Roll Back Malaria (RBM) movement promotes intermittent presumptive treatment (IPT) of malaria infection as a preventive measure against the adverse effects of malaria among pregnant women in Africa. Intermittent preventive treatment (IPT) involves the administration of a full therapeutic course of an

anti-malarial drug to pregnant women at predetermined intervals regardless of whether they are infected or not, beginning after 16 weeks gestation or after quickening, to clear a presumed burden of malaria parasites. IPT helps clear malaria parasites present in the placenta to allow easy transport of oxygen and nutrients.

Intermittent preventive treatment (IPT) of malaria during pregnancy is based on the assumption that every pregnant woman living in areas of high malaria transmission has malaria parasites in her blood or placenta, whether or not she has symptoms of malaria.

The current goals set by African ministers and promoted by the international roll back malaria (RBM) partnership is to ensure that at least 80% of pregnant women in malarious areas receive effective IPT or chemoprophylaxis by 2010. The fact that in most African countries over 70% of pregnant women makes multiple antenatal clinic visits (WHO/UNICEF 2003) provides a major opportunity for prevention of malaria, along with other priority diseases affecting pregnant women using the antenatal clinic. Several countries in sub-Saharan Africa including Ghana, now recommend as national policy, that pregnant women receive IPT with SP.

The recommended drug for IPT is *Sulfadoxine-pyrimethamine* (SP). SP is to be administered in the second and third trimesters of pregnancy during antenatal clinic visits or where there is supervision of a midwife/health worker. One dose of SP is recommended for the second trimester and subsequent doses at four weeks interval, delivered during antenatal clinic (ANC) visits to women of all parities. This approach has been shown to be safe, inexpensive and effective. A study by Verhoeff et al. (1999) in

Malawi evaluating IPT showed a decline in placental malarial infection (32% to 23%) and in the number of low birth weight babies (23% to 10%). It also found that 75% of all pregnant women took advantage of IPT when offered.

In Ghana, the Ghana Health Service recommends up to 3 doses of IPT with SP as directly observed treatment (DOT) following screening for allergy and other reactions to sulfa drugs. IPT with SP is provided as part of a comprehensive antenatal package with other drugs like haematinics and anti-helminthics to control maternal anaemia.

Intermittent preventive treatment (IPT) with sulfadoxine-pyrimethamine (SP) for malaria in pregnancy in areas of high or seasonal malaria transmission has been shown to increase both maternal haemoglobin levels and the infant's birth weight (Schultz et al. 1994; Parise et al. 1998; Shulman 1999; Verhoeff et al. 1999; Rogerson et al. 2000; Shulman et al. 2001; van Eijk et al. 2004; Hommerich et al. 2007). SP may decrease malaria infection during pregnancy by treating placental malaria or by preventing new infections through the long half-life of its drug components. Adverse skin reactions may be more common among HIV-seropositive women, but no other adverse outcomes have been associated with IPT with SP (Parise et al. 1998). IPT with SP during pregnancy is effective in decreasing the prevalence of placental malaria in human immunodeficiency virus (HIV)-negative women (Wolfe et al. 2001).

In spite of the well documented evidence of the efficacy of IPT with SP, a number of studies have revealed very low coverage since its inception in Africa. As at 2007, only Zambia

had exceeded the initial 60% target set at the Abuja meeting in 2000, and no country has reached the current goal of 80% women receiving at least two doses of IPT with SP. Various studies have pointed to low coverage of IPT in countries with the policy. (Gikandi et al. 2008) found that, in rural Kenya, only 22% of women had two or more doses of SP as IPT. In a meta-analysis (Hill and Kazembe 2006) revealed that, though the countries implementing IPT for the control of malaria in pregnancy in Sub-Saharan Africa have made important gains, coverage remains low. They attribute the low coverage to periodic shortages of SP at the health facility level.

2.4.3 FACTORS THAT AFFECT IPT UPTAKE

The conceptual framework for this study suggests that the utilisation of IPT services is a function of systemic or service-related and, user-related factors. These multiple of factors either facilitate or impede the utilisation of IPT services by pregnant women.

Some of the user-related factors that affect the delivery of IPT services include the tendency for late ANC enrolment on the part of pregnant women (van Eijk et al. 2004; Launiala and Honkasalo 2007) and women's limited understanding of IPT (Launiala and Honkasalo 2007). High ANC attendance may lead to high utilization of IPT services because the service is provided during ANC visits. However, high ANC attendance alone is not sufficient to ensure high IPT coverage. This is because when the pregnant women visits the health facility and the drug for IPT is not available, the woman, even though has made a visit to the ANC, will not obtain IPT services. Poor geographical access to ANC services which may be due to long distances between health facilities and the places of

residence of women also limits the use of ANC services and consequently, impact on the uptake of IPT services. Timyan et al. (1993) observed that distance restricts women's willingness as well as their ability to seek healthcare services especially when appropriate transportation is rare, communication is difficult, and terrain and climate are harsh.

Certain factors inherent in the health system also affect the delivery of IPT services. (Hill and Kazembe 2006) found staff shortages, poor drug supply, poor ANC access, poor health worker practices and unclear message about IPT from nurses as some of the operational challenges in the delivery of IPT. The drug for IPT is supposed to be taken under the direct observation of a health worker. The situation where some health workers give the drugs to women to take home gives room for some women to throw the drugs away after leaving the clinic. Such poor health worker practices such as the lack of direct observation of IPT (Mubyazi et al. 2005; Hill and Kazembe 2006; Ouma et al. 2007) and appropriate timing (Launiala and Honkasalo 2007; Ouma et al. 2007) affect the delivery of IPT. Where ANC services are not available within the locality of women, utilization of the service is affected. Added to these, improper planning in the distribution of drugs can also lead to occasional shortages at health facilities. Periodic shortages of SP at health facilities have also been identified as one of the factors that affect the delivery of IPT services by Launiala and Honkasalo (2007). Unclear messages about IPT with SP from health workers and health workers' underperformance also affect the delivery of IPT (Launiala and Honkasalo 2007). Where the health workers themselves seem to give wrong messages about the timing of the administration of the drug, the success of the implementation of the programme is undermined.

2.4.4 ARE THE HEALTH FACILITIES PREPARED FOR THE IPT PROGRAMME

The successful control of malaria in pregnancy requires the delivery of the recommended interventions by skilled, well-informed health workers in the health facilities. The training of these clinic staff in the prevention and control of malaria in pregnant women should, at the minimum, include guidelines for IPT, effective case management, including referral when necessary, and counseling about the use of ITN (WHO 2007).

The training of health workers in the use of simplified IPT messages have been identified as a key strategy in achieving the RBM targets for malaria prevention (Ouma et al. 2007). Where health workers have been trained, they can give clear messages about IPT in terms of the timing of the doses and ensure that the drug is taken under their direct observation. After the health worker is sufficiently trained in the implementation of the prevention and control strategies in malaria, there is the need to make available the required logistics (drugs) to ensure successful programme implementation.

Ensuring sufficient supply of SP in health facilities for IPT is crucial to the success of the prevention and control of malaria in pregnancy since the ANC is the department where the SP is used, the supply should get to that level to ensure success. Stock outs at the ANC level disrupts the implementation process as pregnant women reporting for ANC during the periods of shortages are denied the service. Periodic shortages of SP at the health facilities affect the delivery of IPT services (Hill and Kazembe 2006; Launiala and

Honkasalo 2007). These periodic shortages are mainly due to poor planning which fail to recognise low stock levels and ensure that the drug is always available.

CHAPTER THREE

3.0 METHODOLOGY

3.1 INTRODUCTION

This chapter describes the methodology used in establishing the factors that influence the utilisation of IPT by pregnant women in the District. A description of the study design, research tools used, research procedure and the ethical issues relating to the study are given in the chapter.

3.1 STUDY TYPE, DESIGN AND STEPS

The research is an analytical cross-sectional survey. All pregnant women in their third trimester and postpartum women who had delivered their babies within the preceding three months, and reside in the district, were eligible for inclusion in the study. All communities in the District were entered into statistical package software (STATA ver 9.1) to randomly select the communities in which households were visited. Fifty communities were randomly selected and in each randomly selected community, eighteen households were visited. In each household an eligible woman present was sampled and interviewed by the researcher.

3.2 DATA COLLECTION TOOLS AND TECHNIQUES

Data for the research was collected through the use of questionnaires. The researcher together with the help of trained research assistants administered the questionnaires

(appendix 1) to the women at their residential addresses. The purpose of the study was explained to the participants before the administration of the questionnaires. Help was given to respondents with difficulty in understanding the questionnaires. If the eligible woman was not at home and the neighbours confirmed that there is a pregnant woman or a mother to a three-month baby in the household, a follow up was done to get the woman or mother at home later. Information given by the women was crosschecked with ANC cards where available to confirm the oral account given. A separate set of questionnaire (appendices 3 and 4) was also administered to ANC staff in all the selected health facilities that offer ANC services.

3.3 STUDY POPULATION

The study population comprised all pregnant and postpartum women in the district who delivered their babies in the last three months preceding the study. Out of this population 900 women with gestational age of seven months or more and postpartum women who delivered their babies in the last three months preceding the study were sampled.

3.4 STUDY VARIABLES

Table 2: Study variables

Variable	Definition/Indicator	Type of Variable
<i>Dependent</i>		
IPT uptake	Three doses of SP during pregnancy	Numerical
<i>Independent</i>		
Age	Age in completed years	Numerical
Educational Level	Last grade attained	Categorical
Marital Status	Legal status of union	Categorical
Parity	Total number of previous pregnancies	Numerical/discrete
Accessibility	Home-clinic distance/geographical location of health facility from place of residence of subject	Categorical
Availability of Drug	Continuous supply of the drug to the antenatal clinic for the past 12 months	Binary categorical
Trained ANC staff	In-service training on malaria management in pregnancy during the past 12 months	Binary categorical
Use of ANC services	Total number of ANC visits during the previous pregnancy	Numerical
Gestational age at first ANC visit	Age of pregnancy at first ANC visit	Categorical
Knowledge on malaria/IPT service	Answers to specific questions related to malaria control in pregnancy	Categorical
Type of ANC service	Whether ANC service is given only at the health facility level or health workers visit pregnant women in their community and give the service	Categorical
Socio-economic status	Employment status of respondent	Categorical
Decision-making responsibility	Who decides when the woman should visit the health facility for antenatal service	Categorical
Perception of ANC staff	Response to specific questions on IPT implementation	Categorical

3.5 SAMPLING

It was estimated that a sample size of 900 respondents in the district was required to calculate the true proportion of women using IPT within 5% points and assuming a 60% prevalence of at least four ANC visits. Fifty communities were randomly selected, and in each of the fifty randomly selected communities, eighteen households were randomly selected. An eligible woman each was sampled from the eighteen households. A landmark was identified in each selected community. The front view of the land mark became the initial direction where the sample was drawn. Households were consecutively visited and one eligible woman per household was interviewed until the pre-determined number of eighteen respondents per community was obtained. Where more than one eligible woman was present in a household, a respondent among them was selected randomly. If the number of eligible women in a particular community was not up to eighteen, the next community which was not originally selected was visited to make up the required number.

3.6 PRE-TESTING

The questionnaires for the study were pre-tested in two communities which were not in the list of communities randomly selected for the study. This process allowed for the reaction of the subjects to the research procedure to be observed, and showed whether subjects will be available and/or willing to collaborate with the study. The pre-testing, also allowed for accurate and uniform interpretation of the questions in the local language of the people.

3.7 DATA HANDLING

Information on each questionnaire was cross-checked with ANC cards where available, to ensure that it was complete and consistent. The data was coded into numbers by the researcher and the codes were entered into the computer and stored after the data collection process using the Statistical Package for Social Sciences (SPSS) version 15.0.

3.8 DATA ANALYSIS

Data analysis was undertaken using STATA version 9.1 and the graphs constructed using excel. Descriptive statistics (i.e. frequency analysis) were computed for key study variables. The relationship between place of residence from health facility (distance), knowledge of the service, parity, number of ANC visits, gestational age at first ANC visit, and utilisation of IPT services was investigated and tested for significance using Pearson Chi-square test and Fisher's exact test where necessary. *P*-values determined were considered statistically significant when less than 0.05. Odd ratios were determined to find out the strength of association between certain explanatory variables and the dependent variable.

All missing data were dropped in the analysis. Apart from the determination of ANC attendance and coverage in which all 900 questionnaires were considered, all other statistics and analyses were performed with 641 questionnaires that had no missing data. The results are reported in chapter four.

3.9 ETHICAL CONSIDERATION

In the District in which the study was carried out, permission was sought from the District Health Administration, and from the participants who participated in the study. The participants were assured of anonymity; confidentiality and they were assured of their ability to withdraw or participate in the study. No names or person identification numbers were reflected on the questionnaires except the numbering for questionnaires, which was done for purposes of identification of data during data editing. The results of the study were availed to the Director of Health Services of the district and to those participants who were interested in knowing the results through a forum organised for that purpose after the analysis.

3.10 LIMITATIONS OF STUDY

Limitations of the study include imprecise estimates of gestational ages at first ANC visits and the number of doses of SP taken as IPT during ANC visits due to potential recall bias. It is worth noting that ANC cards may not be regularly available after women have delivered. As much as possible however, ANC cards were obtained to reconcile the oral accounts given by the respondents. Samples of the SP were also shown to respondents to aid recall.

3.11 ASSUMPTIONS

This study was carried out on the assumption that pregnant and postpartum women in the district use antenatal healthcare services rendered by health facilities in the district. Another assumption was that the inclusion criteria set for

postpartum women helped reduced the incidence of recall bias. That is, only women who have delivered in the last three months were included in the study.

CHAPTER FOUR

4.0 RESULTS

4.1 INTRODUCTION

In this chapter the results of the study are described and the analyses of the data are presented. The results of the study are presented according to the study objectives and key variables.

The results describe ANC and IPT services coverage as well as the resources in the District for the implementation of IPT. In addition, the analysis provides the relationships between parity, educational level, distance between place of residence to health facility, use of ANC service, gestational age at first ANC visit, knowledge level on malaria effects and control strategies and utilisation of IPT services.

4.3 SUMMARY OF BACKGROUND CHARACTERISTICS

Table 3 presents the socio-demographic characteristics of the respondents. The table indicates that 13.26% of the respondents are within the age group of 15 – 19 years,

Table 3: Socio-demographic characteristics of the study sample

Variable	n = 641	%
Age		
15 – 19	85	13.26
20 – 24	192	29.95
25 – 29	168	26.21
30 – 34	113	17.63
35+	83	12.95
Marital Status		
Married	436	68.02
Not married	54	8.42
Separated/Divorced	8	1.25
Cohabiting	141	22.00
<i>Missing</i>	2	0.31
Parity		
0	12	1.87
1	156	24.34
>=2	473	73.79
Distance to facility		
<5km	347	54.13
>5km	294	45.87
Employment status		
Unemployed	185	28.86
Employed	456	71.14
Highest educational level		
None	151	23.56
Primary	164	25.59
JSS	277	43.21
SSS/Post Secondary	49	7.64
Total	641	100

Source; Author, August, 2008

29.95% and 26.21% are in the age groups of 20 – 24years and 25 – 29years respectively, with the age groups of 30 – 34 years and 35+ years having 15.63% and 12.95% in that order.

More than half of the respondents, 68.02% are married, 22.00% are cohabitating and 8.42% of them are not married, with 1.25% of them either separated or divorced from their husbands.

Table 2 again shows that 1.87% of the respondents have not given birth before, 24.34% have given birth once, and 73.79% have given birth twice or more.

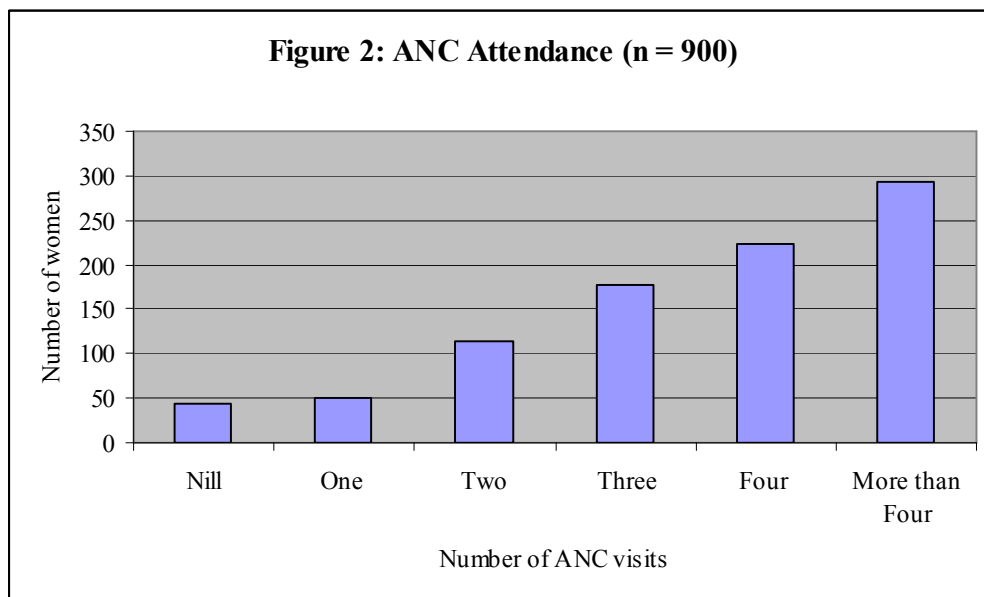
On distance between place of residence and health facility, the table shows that 54.13% of the respondents live within 5km radius from the health facilities while 45.87% live within more than 5km radius from the health facilities.

Regarding their employment status, 28.86% of the respondents are unemployed, whereas 71.14% are in some form of employment.

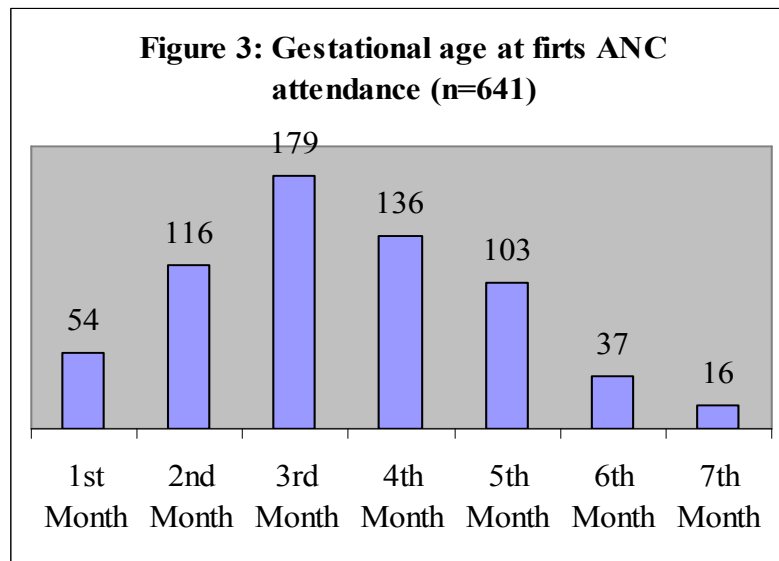
Table 2 further reveals that 23.56% of the respondents have no formal education. Out of the remainder with formal education, 25.59% were educated up to the primary level, 43.21% up to the JSS level, and 7.64% up to SSS/Post Secondary level.

4.4 ANC COVERAGE

ANC attendance was high in the district. Figure 2 indicates that 50 (5.60%) had one encounter with the ANC service, 113 (12.60%) and 177 (19.70%) had two and three encounters respectively. Two hundred and twenty-three respondents (24.80%) had four encounters and 293 (32.60%) had more than four encounters with the ANC service. Generally, respondents start accessing ANC services early, with some 33 (3.7%) starting ANC in the third trimester as shown in figure 3. This result portrays the ANC as a potential place for the implementation of strategies to combat malaria among pregnant women as many pregnant women encounter the ANC before delivery.



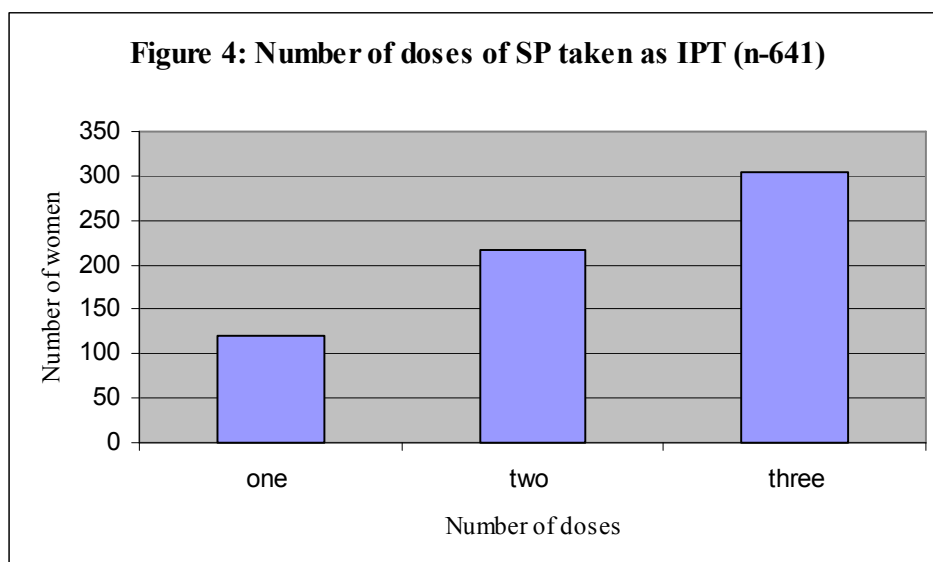
Source: Author, August, 2008



Source: Author, August, 2008

4.5 IPT COVERAGE

According to figure 4, coverage of IPT in the district is high. Out of the 641 respondents that reported having taken IPT, 303, representing 47.27% took the recommended three doses, 121 (18.88%) and 217 (33.85%) also took single and double doses respectively. The result shows that complete IPT coverage (three doses of SP) in the district is thirty-three per cent below the international target of eighty per cent coverage by 2010.



Source: Author, August, 2008

4.6 MALARIA CONTROL STRATEGIES IN PREGNANCY

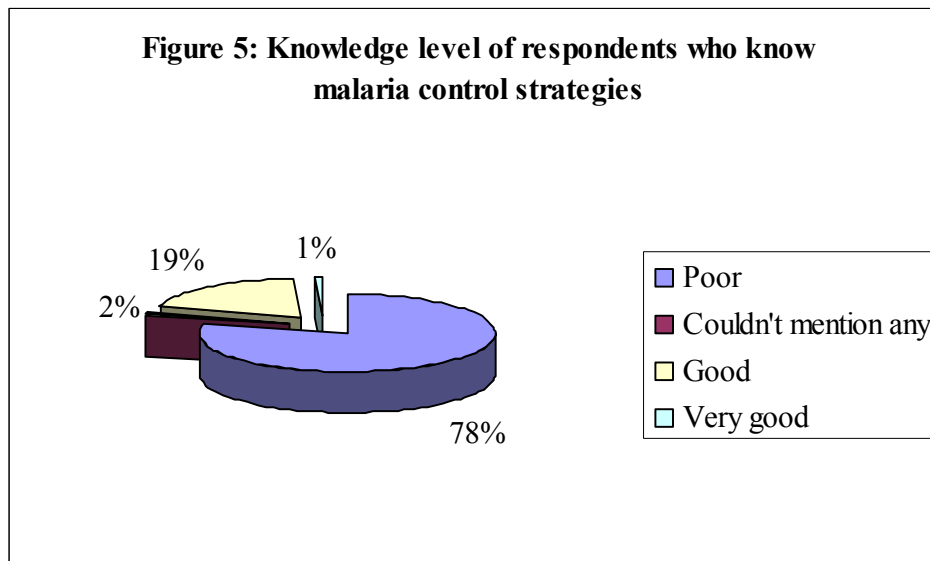
Table 4 below indicates that 77.38% representing 496 respondents, said they know the strategies to control malaria in pregnancy, while 18.56%, representing 119 of the respondents said they do not know the measures to control malaria in pregnancy.

Table 4: Respondents who know about the strategies to control malaria in pregnancy

Response	n	%
Yes	496	77.38
No	119	18.56
<i>Missing</i>	26	4.06
Total	641	100.00

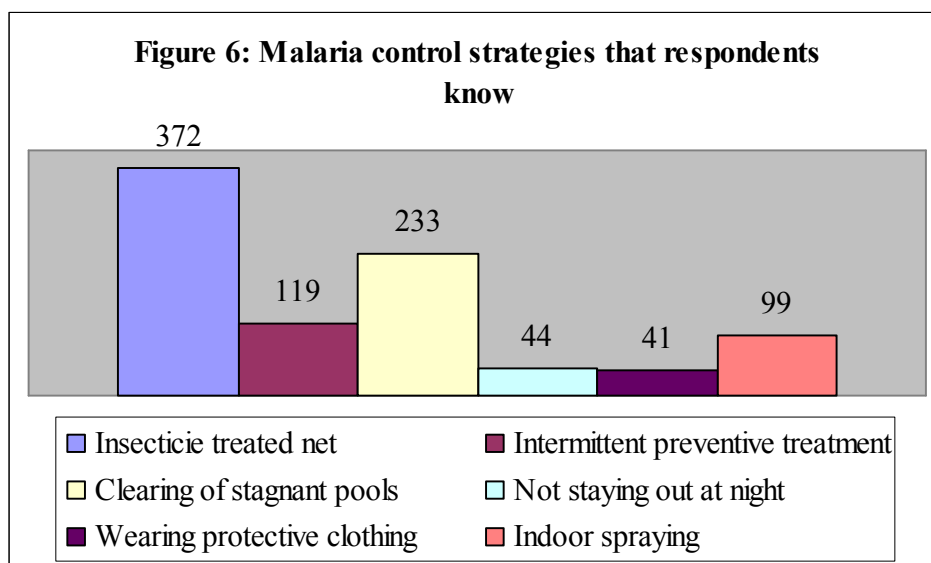
Source: Author, August, 2008

Out of the 496 respondents who said they know about the strategies to control malaria in pregnancy, only 3 (0.60%) demonstrated very good knowledge of the strategies for the control of malaria in pregnancy. Ninety-five (95), representing 19.15% and three hundred and ninety, representing 78.62%, of the respondents demonstrated good and poor knowledge respectively, of the strategies to combat malaria in pregnancy. Furthermore, 8 (1.61%) of them could not mention any malaria control strategy. These are depicted in figure 5 on page 37. Thus three-quarters of the respondents who claim to know the strategies to control malaria in pregnancy do not have good knowledge about these strategies.



Source: Author, August, 2008

Furthermore, of the 496 respondents who said they know about the strategies to control malaria in pregnancy, 372 identified the use of ITN as a malaria control measure, 119 mentioned IPT while 233 declared that clearing of stagnant pools of water in the vicinity is a control measure. Forty-four respondents thought that, not staying outside during the night is a measure, even as 41 and 99 believed that, wearing of protective clothing and indoor spraying respectively, are means of controlling malaria. This is shown in figure 6 on page 38. This result indicates that even of the respondents who know of the strategies for combating malaria, the proportion that know that IPT with SP is a malaria control strategy is low; 24 per cent.



Source: Author, August, 2008

Table 5: Respondents who think that malaria can cause serious problems to them

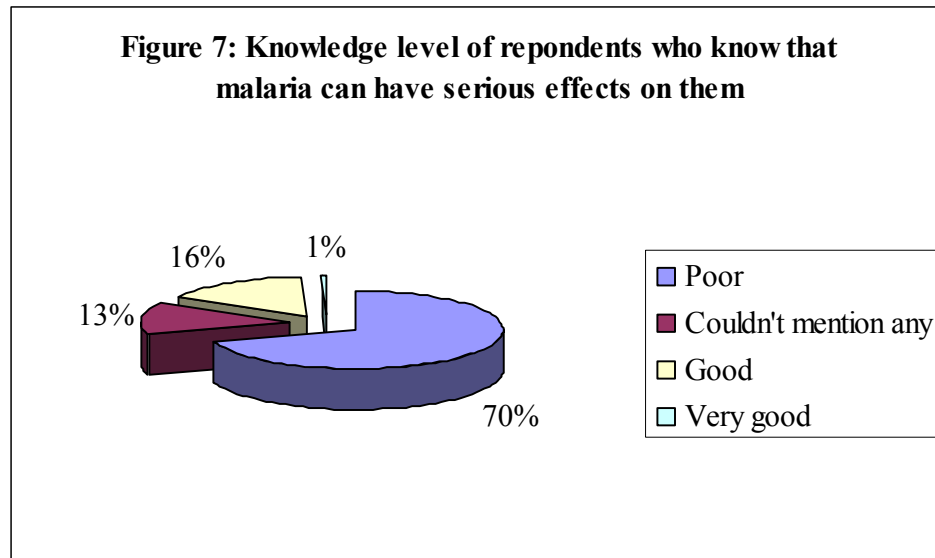
Response	n	%
Yes	528	82.37
No	102	15.91
Missing	11	1.72
Total	641	100.00

Source: Author, August, 2008

From the table 5 above, 528 of the respondents, representing 82.37% said they think that malaria can cause serious problems for them. However, 102 (15.91%) said they do not think that malaria can cause any serious problems for them.

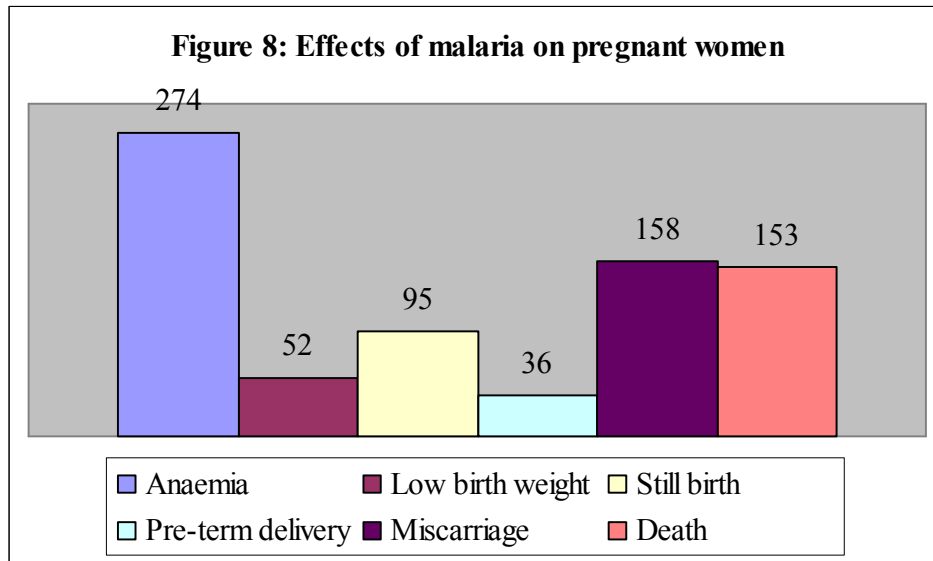
What is more, of the 528 respondents that think that malaria can cause serious problem to them, figure 7 (page 41) indicates that three, representing 0.57% demonstrated very good knowledge of what malaria can cause to them, 85 representing 16.09% displayed good knowledge of what malaria can cause to

them while 370 (70.07%) exhibited poor knowledge on the consequences of malaria on them. Seventy of them (13.25%) however, did not have any knowledge at all on what malaria can cause to them.



Source: Author, August, 2008

Additionally, out of the 528 respondents with knowledge on the effects of malaria them, 274 cited anaemia, 52 cited low birth weight and 95 mentioned still birth. Thirty-six and 158 respondents said that malaria can result in pre-term delivery and miscarriage in that order, with 153 respondents associating malaria with death. This is depicted in figure 8 (page 40). Thus, a large proportion, 71%, of the respondents who have knowledge on the effects of malaria on them do not believe that malaria can lead to death as.



Source: Author, August, 2008

Table 6: Respondents who think that malaria can cause serious problem for the unborn child?

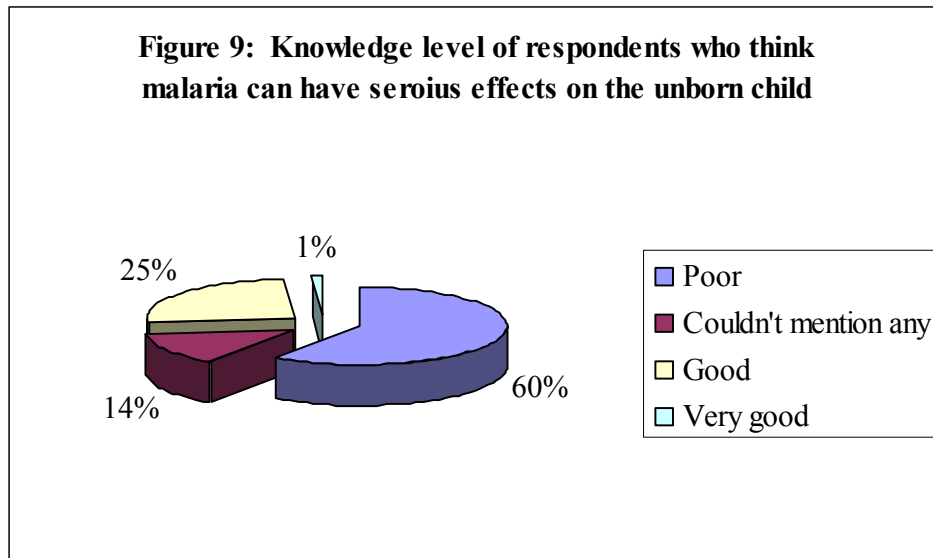
Response	n	%
Yes	474	73.95
No	153	23.57
Missing	14	2.18
Total	641	100.00

Source: Author, 2008

According to table 6, four hundred and seventy-four respondents representing 73.95% alleged they know that malaria can cause serious problems for the unborn child while 113 of them, representing 27.87% held they do not know that malaria can have any debilitating effects on the unborn child.

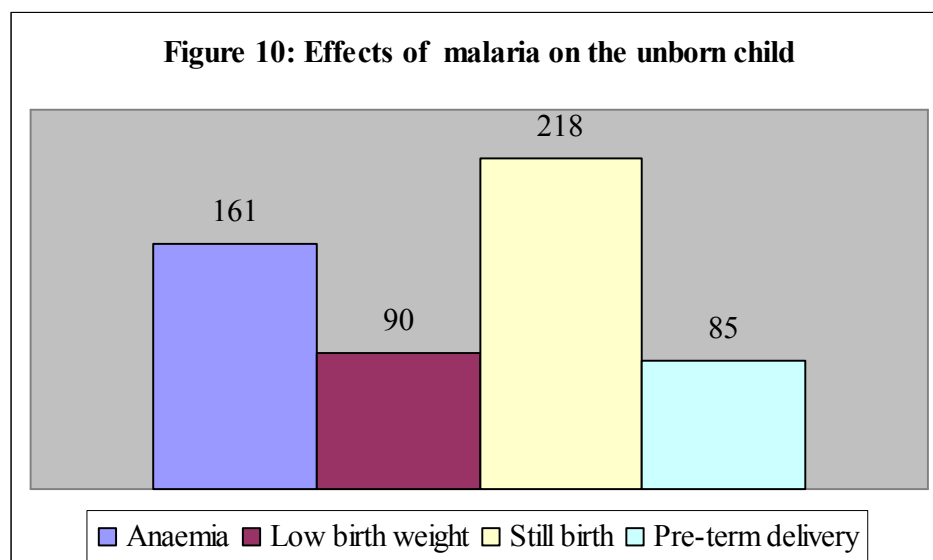
Besides, of the 474 respondents who think malaria can have debilitating effects on the unborn child, figures 9 shows that five (0.05%) of the respondents have very good knowledge of what malaria can cause to the unborn child while 121 (25.52%) have good knowledge of the consequence of malaria on the unborn

child. However, 282 (59.49%) of respondents showed poor knowledge while 66 (13.92%) of them have no knowledge at all on what malaria can cause to the unborn child.



Source: Author, August, 2008

Out of the 474 respondents who think malaria can have dangerous effects on the unborn child, 161 declared that malaria can result in the unborn child being born anaemic. Ninety and 218 in that order thought that malaria can result in low birth weight and still birth, with 85 of them saying malaria can result in pre-term delivery. This is depicted by figure 10 (page 42).



Source: Author, August, 2008

4.7 ASSOCIATION BETWEEN IPT UPTAKE AND FACTORS

Table 7 (page 45) presents the factors that are thought to have association with the uptake of IPT services in the District. The table shows that 13.26% and 29.95% of the women within the age group 15 – 19years and 20 – 24 years respectively utilised IPT services. It also indicates that 26.21%, 17.63% and 12.95% of women in the age groups of 25 – 29 years, 30 – 34years and 35 years and above utilised the service. Although utilisation is high among women within the ages of 20 – 34 years, a chi-square test showed no statistically significant association in terms of age and utilisation of IPT services ($p > 0.05$). Thus the age of the pregnant woman has no influence on the uptake of IPT services. Women in all the age categories tend to use the have similar utilisation pattern.

Table 7: Association between IPT uptake and selected variable

Variable	n (%)	p-value
Age		
15 – 19	85 (13.26)	0.624
20 – 24	192 (29.95)	
25 – 29	168 (26.21)	
30 – 34	113 (17.63)	
35+	83 (12.95)	
Marital status		
Married	436 (68.23)	0.026
Not married	54 (8.45)	
Cohabiting	141 (22.07)	
Separated/divorced	8 (1.25)	
Missing	2 (0.31)	
Parity		
0	12 (1.87)	0.252
1	156 (24.34)	
>=2	473 (73.79)	
Distance		
<5km	347 (54.13)	0.082
>5km	294 (45.85)	
Employment status		
Unemployed	185 (28.86)	0.001
Employed	456 (71.14)	
Educational level		
None	151 (23.56)	0.001
Primary	164 (25.59)	
JSS	277 (43.21)	
SSS/Post sec	49 (7.64)	
Number of ANC visits		
4 or less	416 (64.90)	0.001
5+	225 (35.10)	
Gestational age at first ANC visit		
1 st trimester	349 (54.45)	0.001
2 nd trimester	239 (37.29)	
3 rd trimester	53 (8.27)	

Source: Author, August, 2008

The table also indicates that a greater proportion (73.79%) of the participants in the study is multiparous, 24.34% are primiparous and 1.87% has no parity. Fisher's exact test showed that the association between parity and utilization of IPT was not statistically significant ($p > 0.05$). Thus the parity of the women does not influence their utilisation of IPT services.

As indicated in table 7, a large part of the participants in the study (54.13%) live within 5km radius from the health facilities and 45.85% live more than 5km radius from the health facilities. A chi-square test showed this difference between those who stay far from (more than 5km radius from health facility) and near to health facilities to be insignificant ($p > 0.05$). The implication of this result is that the distance between the place of residence of respondents and where health facilities are located does not influence respondents' uptake of the IPT services.

The research found a high level of association between certain user-related factors and complete IPT uptake. These factors include the marital status of women, employment, educational level, number of ANC visits during pregnancy, and gestational age at first ANC visit.

A bulk of the respondents who utilised the service had support. More than half, 68.23% of the respondents are married and 22.07% are cohabitating. On the other hand, 1.25% and 8.45% in that order are separated/divorced and not married. A chi-square test showed this difference to be significant ($p < 0.05$). Thus women

who are married or cohabitating took the complete IPT package more than women who are not married.

Table 7 indicates that out of the participants in the study who took IPT 28.86% of them are unemployed whereas 71.14% are in some form of employment. Women in employment utilised IPT service than their counterparts without employment. The difference between these groups was statistically significant ($p < 0.05$). This points out that more of the women have employment and are therefore financially independent. As a result, they can afford the cost of healthcare services, and therefore utilise the services as and when there is the need for it.

A good number of the participants utilising the service have formal education. Further, 25.59% had up to primary education, 43.21% had up to JSS education and 7.64% had up to SSS and some form of post secondary education as against 23.56% without any formal education. Utilisation of IPT services was high among educated women than non-educated women, and a chi-square test showed a statistically significant relationship ($p < 0.05$). Women who lacked formal education were more likely not to have the complete IPT uptake than women who have formal education (OR = 1.5 [CI 1.23 – 1.69]).

Table 7 in addition shows that the participants in the study who made more ANC visits utilised IPT services more than those who less number of ANC visits. Thirty-five per cent of participants made more than five ANC visits and 64.90%

made four or less number of visits to the ANC during the period of gestation. A chi-square test showed a highly significant association between the number of ANC visits made during the period of gestation and IPT services utilisation ($p < 0.05$).

More than half (54.45%) of the respondents made their first ANC visit in the first trimester, 37.29% made their first visit in the second trimester with 8.27% visiting for the first time in the third trimester. The earlier the time of first ANC visit by pregnant women, the higher the probability that they would make a lot more number of visits before delivery, and so chances are that they would get the complete dose of SP as IPT. A chi-square test showed a significant association between gestational age at first ANC visit and complete IPT utilisation ($p < 0.05$).

4.8 RESOURCES FOR IPT IMPLEMENTATION

All fourteen midwives randomly sampled had been trained in the implementation of IPT in the last twelve months and exhibited good knowledge on the drug administration process.

ANC services are given only at the health facility level. Consequently, during outreach programmes, IPT services are not available to women.

In terms of the availability of SP, one of the four health facilities sampled reported occasional shortage of the drug. Only one of the sampled health facilities

had evidence of clean water and cups available for women to use in taking the drug. The other health facilities did not provide water for the women to take the drug at the facility as a result of which 77.54% of the women who took IPT bought their own water to take the drug.

CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 INTRODUCTION

This chapter discusses the findings of the study which was aimed at establishing the factors that influence the uptake of IPT services in the Nzema-East District, Ghana.

The study was a cross sectional household survey and specifically looked at the ANC and IPT services coverage in the district, to establish whether there is an association between uptake of IPT services and parity, marital status, educational level of women, distance between place of residence and location of health facility, use of ANC service, gestational age at first ANC visit and knowledge level of women on the effects of malaria and its control measures. It further endeavoured to find out whether health facilities have the required resources for IPT implementation.

A random sample of 900 households from fifty communities selected randomly yielded 900 women that were used to generate information for the study. The women included in the study were those who had delivered three months or been pregnant for seven months before the commencement of the study. The findings

are discussed following the order of the research questions of the study in chapter one.

5.2 ANC COVERAGE

The research shows a high rate of ANC attendance. This is comparable to other studies from other African countries with IPT policy such as Uganda and Kenya. Out of the 900 women sampled in the study, the results showed that ANC coverage in the District was very high (95.1%); 462 respondents (51.3%) visiting initially during the first trimester, 391 respondents (43.4%) during the second trimester, and 33 respondents (3.7%) during the third trimester. Five hundred and sixteen respondents (57.3%) had more than four ANC visits. This is comparable to the findings from a study in the Lewura District in Uganda in which similar results of high ANC utilisation (94.4%) was reported by (Kiwuwa and Mufubenga 2008). Gikandi et al. (2008) also reported high ANC coverage (84%) in a study in Kenya. This finding shows therefore that the ANC offers the potential for implementing the nationally recommended approaches to the prevention and control of malaria in pregnancy. Since many women encounter the antenatal clinics during pregnancy, the ANC can be used as sites for implementing programmes targeted at pregnant women.

5.3 IPT COVERAGE

Nine years after the introduction of IPT in Ghana, the fraction of women benefiting from the policy is small. More than two thirds of women attending

ANC received at least one dose. This, notwithstanding, fewer than half of the 641 women (47.2%; 95% CI [43.1 - 50.8]) received the recommended three doses SP regimen.

These findings are analogous to what was reported in a hospital based studies by van Eijk et al. (2004) in urban Kenya in which 43.4% received one dose of SP and 23.7% received two doses six years after the introduction of the policy. The findings is also similar to that found by Rogerson et al. (2000) in a study in urban Malawi in which 45.1% received one dose and 30.6% received two doses; and by Holtz et al. (2004) in rural Malawi in which 75.7% received one dose and 43.7% received two doses. In other studies in Kenya, Guyatt et al. (2004) also reported that only 5% of women received two or more dose of SP as IPT. Furthermore, in another study, van Eijk et al. (2005) also found that only 6.8% of women had more than one dose of SP as IPT.

5.4 ASSOCIATION BETWEEN FACTORS THAT AFFECT IPT UPTAKE

A majority (95.1%) of the women had an encounter with the ANC during pregnancy, but the proportion that had the recommended three doses of SP as IPT was 47.26%. There was no significant difference among women of various parities in the study as far as IPT uptake is concern. This finding contradicts what was reported by ter Kuile et al. (2003) and van Eijk et al. (2004) that primigravidae tend to use malaria preventive measures more than multivgravidae.

Maternal education has a positive impact on the utilisation of healthcare services. Chakraborty et al. (2002) stated that maternal education increases women's perceived seriousness about maternal morbidities and enhances women's knowledge on the availability of healthcare services. The women's perception and knowledge regarding malaria has as important implication on her utilisation of malaria preventive measures such as IPT. The results of this study illustrate a parallel pattern. Women who thought malaria had serious consequences on them and their unborn babies took the complete doses of SP as IPT more than those who did not think that malaria had any negative effects on them or their unborn babies. This findings is also comparable to the finding of Mbonye et al. (2006) in Uganda that; perceiving malaria as an important complication in pregnancy appears to be an important factor in motivating pregnant women to participate in malaria prevention programme. It however contradicts what Nganda and others found in 2004 in Tanzania that, knowledge influences only use of ITN but not IPT services.

The relatively small number of women that received the complete dose of IPT was due to user-related as well as service-related factors. Gestational age at first ANC visit and number of ANC visits before delivery were significant factors associated with missed IPT doses. This is similar to what was established in Malawi by Launiala and Honkasalo (2007) that, late ANC enrolment contributed to low coverage of IPT uptake among women. This is because as they enroll late,

they are likely not able to make more visits before delivery and hence, miss the opportunities for taking the complete dosage.

Periodic shortages of SP in health facilities has also been cited as one of the contributory factors to low coverage of IPT uptake by Hill and Kazembe (2006) and Launiala and Honkasalo (2007). In this study, one health facility reported occasional shortage of SP. This means that all eligible pregnant women who visited this facility during the period of shortage could not obtain IPT. This notwithstanding, it was not clear why a good number of women who started ANC visits in the second trimester, and made more than two visits did not receive the three doses of SP as IPT.

Distance limits women's willingness and ability to seek healthcare services especially when suitable transportation is scarce, communication is difficult, and terrain and climate are harsh (Timyan et al. 1993). In a study of the determinants of the utilisation of maternal and child health services in Uganda, physical accessibility was an important variable that was found to be associated with utilization (Chakraborty et al. 2002). In another study to determine the factors influencing utilisation of postnatal services in Mulango and Mengo Hospitals in Kampala, Uganda, Nankwanga (2004) found a statistically significant relationship between distance and utilisation of postnatal services.

In this research, 54.13% of the participants live within 5km radius from health facilities while 45.85% live more than 5km radius from health facilities but there was no statistically significant difference among those who stay more than 5km away from health facilities and those who reside within 5km from health facilities as far as IPT uptake is concern. This may possibly be due to the fact that the research was carried out in the southern part of the District where the health facilities are concentrated and the road network appear to be relatively good.

Women's employment status was also found to be a significant factor in the utilisation of IPT services. Women who were employed used the services more than their unemployed counterparts. This is not surprising when you realise that women in employment not only have financial independence and ability to pay for and use healthcare services, but also, they are more empowered to take part in the decision making process about healthcare in the family.

There was a statistically significant association between IPT utilisation and marital status of women. Thus married women took IPT more than single women. This can be attributed to the fact that married women have better support systems in terms of finances and therefore their ability to utilize the healthcare services available is enhanced.

5.5 RESOURCES FOR IPT IMPLEMENTATION

Well informed health workers in the health facilities are necessary for the success of the programme to control malaria in pregnancy. The key ANC staff in the district have been trained in the management of malaria in pregnancy and exhibited very good knowledge of IPT administration. This is good when you realise that Ouma et al. (2007) have reported that, the training of health workers in the use of simplified IPT messages is a strategy for achieving the RBM targets for malaria prevention.

IPT is delivered only at ANC sessions in the health facilities. During outreach programmes, IPT services are not delivered. ANC coverage is high, but there are yet missed opportunities, poor access and low compliance. Mbonye et al. (2008) have observed in Uganda that more women (67.5%) received the complete dose of SP through the community delivery approach, compared with 39.9% who received the same number of doses at the health facility level. Using the community delivery approach in which TBAs and community reproductive health workers can administer IPT will help reach those at great risk of malaria but too far from the health facilities, and help increase access and compliance. It will also increase the coverage as women may get the dose within their community even if they do not visit the ANC.

According to Hill and Kazembe (2006) and Launiala and Honkasalo (2007) poor drug supplies affect the delivery of IPT services. The continuous supply of SP to

health facilities is crucial to improve coverage of IPT services. There was shortage of SP in one health facilities and this clearly resulted in denying those eligible women who reported to the facility the opportunity to take the drug.

On the availability of water to take the drug at the health facility under the direct observation of health workers, there was no evidence that most health facilities provided water for the women to take the drug in the presence of health staff. Most women provided their own water. Where the woman is unable to get clean water at the facility she is likely to be given the drug to take home. Such practice can result in some women throwing away the drugs after they have left the health facility.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 INTRODUCTION

Nine hundred women from 900 households selected randomly from fifty randomly selected communities were interviewed to generate information for the study of the factors that influence the uptake of IPT services in the Nzema-East district, Ghana, in August, 2008. The conclusions and recommendations from the result of the study are presented in this chapter.

6.1 CONCLUSION

The study showed that majority, 95.1%; CI [93.6 – 96.4] of the women had an encounter with the ANC during their last pregnancies. More than half, 52%; CI [47.7 – 54.3] of the women had their first ANC encounter in the first trimester, and 57.3%; CI [53.8 – 60.2] made four or more visits to the ANC before delivery.

Notwithstanding the high ANC attendance, and the fact that over half of the women made their first ANC visits in the first trimester, the study indicated that complete IPT uptake (three doses of SP) coverage was 47.20%; CI [43.1 - 50.8].

The study did not demonstrate any statistically significant association between IPT uptake and parity as well as between IPT uptake and physical accessibility of

health facilities. Nevertheless, it illustrated that the association between IPT uptake and marital status, employment, maternal educational level, use of ANC services, gestational age at first ANC visit and maternal knowledge about malaria was statistically highly significant, hence these factors influence the uptake of IPT services

As high as 77.38%; CI [73.7 – 80.2] of participants in the study know about strategies to combat malaria in pregnancy, but only 18.56%; CI [15.2 – 20.9] of this proportion know that IPT is a malaria control intervention.

Women who thought malaria had serious consequences on them and their unborn babies took the complete doses of IPT more than women who did not think that malaria had any negative effects on them or their unborn babies. In addition, women who lacked formal education were more likely not to have complete IPT (OR 1.5; CI 1.23 – 1.69).

Health personnel in the District are generally trained in malaria control in pregnancy and are aware of IPT. On the other hand, continuous drug supply to health facilities within the district was not confirmed as there were occasional shortages of SP at the health facility level in the sub-district.

6.1 RECOMMENDATIONS

The high ANC attendance should provide health workers the chance to educate pregnant women about healthy behaviours and practices. ANC care providers should use this opportunity to conduct health education sessions in which they should educate women about the importance of IPT to them and their unborn babies.

There should be conscious effects at ensuring the provision of SP for IPT to women under direct observation of health workers during ANC visits, as this would be the most obvious option for increasing the coverage of IPT when you realise that ANC attendance is very high. No woman should be given the drug to take away as there will not be any guarantee that they will take the drug later in their homes. To achieve this clean water should be provided at the ANC unit every time.

Pregnant women should be continuously sensitised during ANC sessions about the consequences of malaria in pregnancy and the benefits of IPT for them as well as their unborn babies.

The DHMT must ensure, through proper planning, that there is continuous supply of the drug to the health facilities, so that stock levels at the health facilities are always high to prevent the occasional shortages at health facilities in the sub-district.

The DHMT should consider using a community delivery approach in which TBAs and community health workers or volunteers will be trained to administer IPT at the community level to help reach those at great risk of malaria but may not visit the health facilities, to help increase access and compliance.

Finally, after almost a decade of implementation of IPT as a measure to control malaria in pregnant women, there should be further studies to assess the impact of IPT with SP on mothers and babies.

BIBLIOGRAPHY

- Brabin, B. J. (1983). "An analysis of malaria in pregnancy in Africa." Bulletin of the World Health Organization **61**: 1005 - 1016.
- Chakraborty, N., Ataharul, I., Chowdhury, I. and Wasimul, B. (2002). "Utilisation of postnatal care in Bangladesh: evidence from a longitudinal study. Health and Social Care in the Community." **10**(6): 429-502.
- GHS (2001). "Roll Back Malaria Baseline Survey. Accra, Ghana, Ghana Health Services."
- GHS (2003). "National guidelines on intermittent preventive treatment of malaria in pregnancy. Accra, Ghana, Ghana Health Services."
- Gikandi, P. W., Noor, A. M., Gitonga, C. W., Ajanga, A. A. and Snow, R. W. (2008). "Access and barriers to measures targeted to prevent malaria in pregnancy in rural Kenya." Trop Med Int Health **13**(2): 208-17.
- GSS (2003). "Ghana Demographic and Health Survey. Accra, Ghana, Ghana Statistical Services."
- Guyatt, H. L., Noor A. M., Ochola, S. A. and Snow, R. W. (2004). "Use of intermittent presumptive treatment and insecticide treated bed nets by pregnant women in four Kenyan districts." Trop Med Int Health **9**(2): 255-61.
- Hill, J. and Kazembe, P. (2006). "Reaching the Abuja target for intermittent preventive treatment of malaria in pregnancy in African women: a review of progress and operational challenges." Trop Med Int Health **11**(4): 409-18.
- Holtz, T. H., Kachur, S. P., Roberts, J. M., Marum, L. H., Mkandala, C., Chizani, N., Macheso, A. and Parise, M. E. (2004). "Use of antenatal care services and intermittent preventive treatment for malaria among pregnant women in Blantyre District, Malawi." Trop Med Int Health **9**(1): 77-82.
- Hommerich, L., von Oertzen, C., Bedu-Addo, G., Holmberg, V., Acquah, P. A., Eggelte, T. A., Bienzle, U., and Mockenhaupt, F. P. (2007). "Decline of placental malaria in southern Ghana after the implementation of intermittent preventive treatment in pregnancy." Malar J **6**: 144.
- <http://www.rbm.who.int>.
- Kiwuwa, M. S. and Mufubenga, P. (2008). "Use of antenatal care, maternity services, intermittent presumptive treatment and insecticide treated bed nets by pregnant women in Luwero district, Uganda." Malar J **7**: 44.
- Launiala, A. and Honkasalo, M. L. (2007). "Ethnographic study of factors influencing compliance to intermittent preventive treatment of malaria during

pregnancy among Yao women in rural Malawi." Trans R Soc Trop Med Hyg **101**(10): 980-9.

Mbonye, A. K., Bygbjerg, K. and Magnussen, P. (2008). "Intermittent preventive treatment of malaria in pregnancy; a new delivery system and its effects on maternal health and pregnancy outcomes in Uganda." Bull World Health Organisation **86**(2): 93-100.

Mbonye, A. K., Neema, S. and Magnussen, P. (2006). "Preventing malaria in pregnancy: a study of perceptions and policy implications in Mukono district, Uganda." Health Policy Plan **21**(1): 17-26.

McCormic, M. C. (1985). "The contribution of low birth weight to infant mortality and childhood morbidity." New England Journal of Medicine **312**: 82-90.

McGregor, I. A. (1987). "Thoughts on malaria in pregnancy with consideration of some factors which influence remedial strategies." Parassitologia **29**(2-3): 153-63.

McGregor, I. A., Wilson, M. E. and Billewicz, W. C. (1983). "Malaria infection of the placenta in the Gambia, West Africa; its incidence and relationship to stillbirth, birth weight and placental weight." American Journal of Tropical Medicine and Hygiene **77**: 232-244.

Mubyazi, G., Bloch, P., Kamugisha, M., Kitua, A. and Ijumba, J. (2005). "Intermittent preventive treatment of malaria during pregnancy: a qualitative study of knowledge, attitudes and practices of district health managers, antenatal care staff and pregnant women in Korogwe District, North-Eastern Tanzania." Malar J **4**: 31.

Nankwanga, A. (2004). Factors influencing utilisation of postnatal services in Mulago and Mengo Hospitals, Kampala, Uganda. Department of Physiotherapy, University of Western Cape. Master of Science Physiotherapy.

Nganda, R. Y., Drakeley, C., Reyburn, H. and Marchant, T. (2004). "Knowledge of malaria influences the use of insecticide treated nets but not intermittent presumptive treatment by pregnant women in Tanzania." Malar J **3**: 42.

Ouma, P. O., van Eijk, A. M., Hamel, M. J., Sikuku, E., Odhiambo, F., Munguti, K., Ayisi, J. G., Kager, P. A. and Slutsker, L. (2007). "The effects of health care worker training on the use of intermittent preventive treatment for malaria in pregnancy in rural western Kenya." Trop Med Int Health **12**(8): 953-961.

Parise, M. E., Ayisi, J. G., Nahlen, B. L., Schultz, L. J., Roberts, J. M., Misore, A., Muga, R., Oloo, A. J. and Steketee, R. W. (1998). "Efficacy of sulfadoxine-pyrimethamine for prevention of placental malaria in an area of Kenya with a high prevalence of malaria and human immunodeficiency virus infection." Am J Trop Med Hyg **59**(5): 813-22.

Rogerson, S. J., Chaluluka, E., Kanjala, M., Mkundika, P., Mhango, C. and Molyneux, M. E. (2000). "Intermittent sulfadoxine-pyrimethamine in pregnancy: effectiveness against malaria morbidity in Blantyre, Malawi, in 1997-99." Trans R Soc Trop Med Hyg **94**(5): 549-53.

Schultz, L. J., Steketee, R. W., Chitsulo, L., Macheso, A., Nyasulu, Y. and Ettling, M. (1994). "Malaria and childbearing women in Malawi: knowledge, attitudes and practices." Trop Med Parasitol **45**(1): 65-9.

Shulman, C. E. (1999). "Malaria in pregnancy: its relevance to safe-motherhood programmes." Ann Trop Med Parasitol **93 Suppl 1**: S59-66.

Shulman, C. E., Marshall, T., Dorman, E. K., Bulmer, J. N., Cutts, F., Peshu, N. and Marsh, K. (2001). "Malaria in pregnancy: adverse effects on haemoglobin levels and birthweight in primigravidae and multigravidae." Trop Med Int Health **6**(10): 770-8.

Steketee, R. W., Nahlen, B. L., Parise, M. E. and Menendez, C. (2001). "The burden of malaria in pregnancy in malaria-endemic areas." Am J Trop Med Hyg **64**(1-2 Suppl): 28-35.

Steketee, R. W., Wirima, J. J., Hightower, A. W., Slutsker, L., Heymann, D. L. and Breman, J. G. (1996). "The effect of malaria and malaria prevention in pregnancy on offspring birthweight, prematurity, and intrauterine growth retardation in rural Malawi." Am J Trop Med Hyg **55**(1 Suppl): 33-41.

ter Kuile, F. O., Terlouw, D. J., Phillips-Howard, P. A., Hawley, W. A., Friedman, J. F., Kariuki, S. K., Shi, Y. P., Kolczak, M. S., Lal, A. A., Vulule, J. M. and Nahlen, B. L. (2003). "Reduction of malaria during pregnancy by permethrin-treated bed nets in an area of intense perennial malaria transmission in western Kenya." Am J Trop Med Hyg **68**(4 Suppl): 50-60.

Timyan, J., Brechin, G. S. J., Measham, D. M. and Ogunleya, Eds. (1993). Access to care: More than a problem of distance In. The health of women: A global perspective. , Boulder, Westview Press.

van Eijk, A. M., Ayisi, J. G., ter Kuile, F. O., Otieno, J. A., Misore, A. O., Odondi, J. O., Rosen, D. H., Kager, P. A., Steketee, R. W. and Nahlen, B. L. (2004). "Effectiveness of intermittent preventive treatment with sulphadoxine-pyrimethamine for control of malaria in pregnancy in western Kenya: a hospital-based study." Trop Med Int Health **9**(3): 351-60.

van Eijk, A. M., Ayisi, J. G., ter Kuile, F. O., Slutsker, L., Otieno, J. A., Misore, A. O., Odondi, J. O., Rosen, D. H., Kager, P. A., Steketee, R. W. and Nahlen, B. L. (2004). "Implementation of intermittent preventive treatment with sulphadoxine-pyrimethamine for control of malaria in pregnancy in Kisumu, western Kenya." Trop Med Int Health **9**(5): 630-7.

van Eijk, A. M., Blokland, I. E., Slutsker, L., Odhiambo, F., Ayisi, J. G., Bles, H. M., Rosen, D. H., Adazu, K. and Lindblade, K. A. (2005). "Use of intermittent preventive treatment for malaria in pregnancy in a rural area of western Kenya with high coverage of insecticide-treated bed nets." Trop Med Int Health **10**(11): 1134-40.

Verhoeff, F. H., Brabin, B. J., Hart, C. A., Chimsuku, L., Kazembe, P. and Broadhead, R. L. (1999). "Increased prevalence of malaria in HIV-infected pregnant women and its implications for malaria control." Trop Med Int Health **4**(1): 5-12.

WHO (2007). "Malaria in pregnancy; guidelines for measuring key monitoring and evaluation indicators."

WHO/UNICEF (2003). Africa Malaria Report. WHO/CDS/Mal/2003.1093.

Wolfe, E. B., Parise, M. E., Haddix, A. C., Nahlen, B. L., Ayisi, J. G., Misore, A. and Steketee, R. W. (2001). "Cost-effectiveness of sulfadoxine-pyrimethamine for the prevention of malaria-associated low birth weight." Am J Trop Med Hyg **64**(3-4): 178-86.

APPENDIX 1

Kwame Nkrumah University of Science and Technology,
School of Medical Sciences,
Department of Community Health.
July 11, 2008.

The District Director,
Ghana Health Services,
Nzema-East District,
Axim.

Sir,

REQUEST TO CARRY OUT A RESEARCH STUDY IN NZEMA-EAST DISTRICT

I am a postgraduate student of public health at the Kwame Nkrumah University of Science and Technology, Kumasi. I intend to carry out a study with the ultimate aim of finding out the factors affecting the uptake of intermittent preventive treatment services in the Nzema-East. This study is part of the requirement for the award of a Master of Science degree in Health Education and Promotion.

I therefore write to request for permission to carry out the study in your health district during the period July-September, 2008. The details about the study are contained in the abstract of the proposal attached. It is expected that the results of the study will be useful in the Promotion of the health of women in the District.

I look forward to hear from you soon.

Yours faithfully,

Augustine A. Acquah.

(MSc. Health Education and Promotion Resident)

APPENDIX 2

Questionnaire For Pregnant/Postpartum Women

This questionnaire aims at obtaining information about the factors influencing the uptake of IPT services. The information obtained will be used for the purpose of this study only, and therefore will be kept confidential.

Instruction

Tick the appropriate answer provided.

Name of researcher	
Name of community	
Date of interview	Record number

S/No.	Basic demographic/ general information	Response
	Where do you live?
	How long does it take you to get to the clinic?	1 = < 30 minutes 2 = 30min. and 1hr 3 = more than 1hr
	How far is the place from a hospital or clinic from?	1 = <5km 2 = >=5km
	What means do you use to get to the hospital?	1 = walk 2 = car
	How old are you?	1 = 15 – 19 2 = 20 – 24 3 = 25 – 29 4 = 30 – 34 5 = 35+
	What is your religious denomination?	0 = none 1 = Moslem 2 = Christian 3 = other
	What is your present marital status?	1 = married 2 = not married 3 = separated /devoiced 4 = cohabitating
		0 = none 1 = primary 2 = JSS 3 = SSS

	What is your highest educational level?	4 = post secondary
	How many times have you given birth?	1 = 1 2 = 2 3 = 3 4 = 4 5 = more than 4
	<i>Socio-economic factors</i>	
	What is your present employment status?	0 = none 1 = self employed 2 = private/govt service 5 = other
	What is the present employment status of your husband?	0 = none 1 = self employed 2 = private/govt service 5 = other
	Do you have a health insurance policy?	1 = yes 2 = no
	<i>Influence of household</i>	
	What is your relationship with the household head?	1 = husband 2 = mother 3 = father 4 = other
	Employment status of household head?	0 = none 1 = self employed 2 = private/govt service 3 = other
	Number of adult males in the house	1 = 1 2 = 2 3 = 3 4 = 4 5 = more than 4
	Number of adult females in the house	1 = 1 2 = 2 3 = 3 4 = 4 5 = more than 4
	Total number of children	1 = 1 1 = 2 3 = 3 4 = 4 5 = more than 4

	What is the highest educational level of the household head?	0 = none 1 = primary 2 = JSS 3 = SSS 4 = post secondary
	Who has the final say in making a decision to visit the antenatal clinic?	1 = woman only 2 = husband only 3 = jointly with husband 4 = jointly with someone else 5 = someone else
	<i>Antenatal clinic / malaria issues</i>	
	At what month (during the last pregnancy) did you first visit the ANC?	1 st month 2 nd month 3 rd month 4 th month 5 th month 6 th month After the 6 th month
	For how many times did you visit the ANC during the last pregnancy?	0 = none 1 = one 2 = two 3 = three 4 = four 5 = more than 4
	*How many times have you attended ANC so far?	0 = none 1 = one 2 = two 3 = three 4 = four 5 = more than 4
	Do you know about the measures to prevent malaria in pregnancy?	1 = yes 2 = no
	Mention them(tick as many as possible)	Indoor residual spraying The use ITN The use of IPT Clearing stagnant pools around Not staying outside during the night Wearing of protective clothing
	Do you think malaria can cause a serious problem for you?	1 = yes 2 = no

	What are some of the problems that malaria can cause for you(tick as many as possible)	Anaemia Miscarriage Low birth weight Still birth Pre term labour Death as a result of sever anaemia
	Do you think malaria can cause any serious problem for the unborn child?	1 = yes 2 = no
	What are some of the problems that malaria can cause for the unborn child?	Anaemia Low birth weight Pre term delivery Still birth
	Were you aware you had to take a medicine to prevent you and your unborn child from malaria during pregnancy?	1 = Yes 2 = no
	If yes, how many doses of this medicine were you suppose to take before delivery?	1 = 1 2 = 2 3 = 3 4 = 4 or more
	How many times did you take the medicine before delivery?	1 = 1 2 = 2 3 = 3 4 = 4 or more
	Where did you take the medicine?	1 = at the hospital 2 = at home 3 = other
	If at the hospital, how did you get water?	1 = supplied by the facility 2 = bought my own water
	Did you go to the hospital for the medicine at a time and you were told the medicine is finished?	1 = yes 2 = no
	How do you grade the services you received from the hospital?	1 = very good 2 = good 3 = bad 4 = very bad

Thank you for your participation

APPENDIX 3

Questionnaire For Midwives and In-Charges of Antenatal Clinics and Health Facilities

This questionnaire aims at obtaining information about the factors influencing the uptake of IPT services. The information obtained will be used for the purpose of this study only, and therefore will be kept confidential.

Instruction

Tick the appropriate answer provided, and where applicable write the required responses in the spaces provided.

Name of researcher			
Name of facility			
Date of interview		Record number	

Sr. No	Item	Response
1	How many staff are required at the ANC department?	
2	How many are at post?	
3	How will you describe the staff situation at the ANC department	1 = Adequate 2 = Inadequate
4	Has there been any training on malaria control in pregnancy for ANC staff in the last 18 months?	1 = Yes 2 = No
5	Has there been shortage of SP in your facility during the last 18 months?	1 = Yes 2 = No
6	Do you provide ANC services during outreach visits?	1 = Yes 2 = No
7	Do you provide IPT services during outreach visits?	1 = Yes 2 = No
8	Suggest ways of improving the implementation of the IPT programme	

APPENDIX 4

Questionnaire For Health Workers/ANC staff

This questionnaire aims at obtaining information about the factors influencing the uptake of IPT services. The information obtained will be used for the purpose of this study only, and therefore will be kept confidential.

Instruction

Tick the appropriate answer provided, and where applicable write the required responses in the spaces provided.

Name of researcher			
Name of facility			
Date of interview		Record number	

Sr. No	Item	Response
1	What is your designation?	1 = Nurse 2 = Midwife 3 = Health Aid
2	How many years have you worked at the ANC department?	1 = One year 2 = Two years 3 = Three years or more
3	Have you had any in-service training on malaria control in pregnancy in the last 12 months?	1 = Yes 2 = No
4	How many doses of SP are pregnant women expected to take as IPT before delivery?	0 = One 1 = Two 2 = Three 3 = Four
5	List the order and periods within which the number of doses required are given.	-First dose at first antenatal visit (given after quickening) -Second dose at least one month after first dose -Third dose at least one month after second dose
6	Is there a period during pregnancy that SP administration is not required?	1 = Yes 2 = No
7	Mention the periods if you responded yes to (6) above.	-During the first trimester -After 36 weeks of pregnancy -Less than one month after the previous dose
8	Is IPT with SP for all pregnant women?	1 = Yes 2 = No
		-Those allergic to sulphur drugs

9	Which category of pregnant women would you not give SP. (tick as many as possible)	<ul style="list-style-type: none"> -Those in first trimester -Those who have received recent treatment with SP (less than one month) -Those taking co-trimoxazole to treat other infections
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