UNIVERSITY FOR DEVELOPMENT STUDIES

AN INVESTIGATION OF FACTORS INFLUENCING THE UPTAKE OF INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY PROGRAMME IN THE BEKWAI MUNICIPALITY OF GHANA

BY

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DECLARATION

Student

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere:

Signature ..... **Date** 08/02/16

VENSON ADDAI- DONKOR

Supervisors'

I hereby declare that the preparation and presentation of the dissertation was supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies

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ABSTRACT

Low uptake of IPT services among pregnant women can lead to high malaria cases among pregnant women which could culminate into low birth weight, maternal anaemia and placental parasitaemia. This study sought to investigate factors that influence the uptake of IPT services among pregnant women in the Bekwai Municipality. A community-based cross sectional study was conducted in 33 communities of the Municipality. Focus Group Discussions and structured interviews were employed in data collection. The study found that 75% (247) of the respondents had malaria during their pregnancies. The study again found that 24.5% (77) of the respondents took only IPT1 whilst 45.7% (150) took IPT2. The proportion of respondents who took all the three IPTp or SP doses was 30.8% (101). The predictors of IPTp uptake identified in bivariate analyses showed that age of respondents is positively associated with the uptake of IPTp services. As the age of respondents increases, the uptake of IPTp decreases. Also, the gravida of respondents was also found to be significantly associated with use of IPTp services. Gravida is positively associated with frequency of ANC visits. The trend of taking all the three SP doses was positively associated with increasing educational level. Respondents who made more ANC visits were more likely to take all the three SP doses. None of the respondents reported lack of IPT or SP drugs. It is recommended that Nurses at the ANC centers should not just supervise the uptake of SP drugs at the centers but also scale up health education on the importance of IPT in pregnancy.

Key words: *Antenatal Care (ANC), Intermittent Preventive Treatment (IPT), Malaria, Pregnancy, Sulfadoxine-Pyrimethamine (SP).*

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DEDICATION

To my wife and children

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LIST OF ABBREVIATIONS

ACT:	Artemisinin-based combination therapy
ANC:	Antenatal Care
DHD:	District Health Directorate
EPI:	Expanded Programme on Immunization
GDHS:	Ghana Demographic and Health Survey
HIV:	Human Immune Virus
IPT:	Intermittent Preventive Treatment
ITN:	Insecticide Treated Net
IPTp:	Intermittent Preventive Treatment in pregnancy
MDGs:	Millennium Development Goals
MICS:	Multiple Indicator cluster Survey
NMCP:	National Malaria Control Programs
SP:	Sulfadoxine-pyrimethamine
SES:	Socio Economic Status
SPSS:	Statistical Package for Social Sciences
UNICEF:	United Nations International Children's Emergency Fund
WHO:	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Malaria is an entirely preventable and treatable mosquito borne illness. In 2013, 97 countries had ongoing malaria transmission. An estimated 3.4 billion people are at risk of malaria of which 1.2 billion are at high risk (WHO, 2014). In high risk areas more than one malaria case occurs per 1000 population. There were an estimated 207 million cases of malaria in 2012 and an estimated 627000 deaths WHO, 2012). About 90% of all malaria deaths occur in Sub-Sahara Africa. In 2012 malaria killed an estimated 482000 children less than five years of age. That is 1300 children every day or one child almost every minute. Between 2000 and 2012, the scale-up of intervention helped to reduce malaria incidence rate by 25% globally, and by 31% in the WHO African Region (WHO, 2013).

The annual world malaria reports consistently show that Africa bears the heaviest burden and the highest risk of malaria infection. In this regard, about 80% of the reported malaria cases and about 90% of the reported deaths occur in Africa, with children below five years and pregnant women living in malaria-endemic regions suffering the most (WHO, 2012). Although five species of parasites cause malaria, *Plasmodium falciparum* accounts for about 90 to 98% of all infections in the African region. The anopheles female mosquito is the vector responsible for the transmission of *Plasmodium. Falciparum* parasite to humans through its bite (WHO, 2011)

In public health facilities, clinically diagnosed malaria accounts for about one-third of outpatient consultations, 19% of hospital admissions and 3-5% of inpatient deaths (Ghana Health Service, 2012). Malaria is not only a public health challenge, but also an impediment to economic productivity at the household, community and national levels.

According to Steketee et al. (2011) malaria infection in pregnancy is highly risky for the mother and her fetus. Intermittent Preventive Treatment in pregnancy (IPTp) with sulfadoxine-pyrimethamine is a key intervention for malaria prevention during pregnancy.

The WHO (2011) again reported that globally, about 50 million women become pregnant each year, of which more than one-half reside in Africa, where the risk of malaria infection is highest. The report further stated that malaria infection during pregnancy is highly risky for the mother and her fetus, particularly due to low levels of immunity.

According to Luxembourgers et al. (2007), malaria in pregnancy accounts for 5 to 12% of all low-weight births. In low risk zones, episodes of severe malaria significantly associates with stillbirths, spontaneous abortion, premature delivery and maternal death. However, in high-risk areas, women are susceptible to asymptomatic infection, with potential results being maternal anaemia and placental parasitaemia. Both situations are conducive for low birth weight and subsequently, infant mortality.

Intermittent Preventive Treatment in pregnancy (IPTp) is one of the key interventions recommended by WHO to bolster the prevention of asymptomatic infections among pregnant women living in moderate to high-risk regions. For example in Kenya as reported by the Ministry of Public Health and Sanitation (2010), the Government's

policy on IPTp states that all pregnant women living in malaria-endemic zones should receive sulfadoxine-pyrimethamine(SP) for prevention of malaria during pregnancy. In this regard, all pregnant women should receive the first dose of three tablets (IPTp1), which providers administer under their direct observation at the antenatal care (ANC) facilities within the 16th week of gestation. Recipients of IPTp1 should access subsequent doses during each of the scheduled monthly visits to ANC facilities. Hence, all pregnant women should access the second dose (IPTp2) within the 20th week of pregnancy. WHO recommends a minimum of IPTp2 protection against malaria for women residing in high risk regions (WHO, 2005). The Kenyan Policy is not different from Ghana as pregnant women are supposed to take IPT three times before delivery.

The African Summit on Roll Back Malaria, which took place in April 2000 set the IPTp2 coverage target at 60% by 2005, while the global target stands at 80% by 2010 (Olliaro et al., 2008).

The IPTp uptake is a subject that has attracted many empirical investigations, at the community, national and regional levels, particularly in Africa. A study conducted by Ouma et al. (2007) found that personal attributes such as marital status and education level influenced the IPTp uptake. In this regard, the study noted that the IPTp uptake was significantly higher among participants with university education than those reporting primary education.

In Ghana about 44% of out-patient cases is due to malaria and is the leading cause of cases admitted to hospital (GHS, 2011). Malaria among pregnant women in Ghana accounts for 13.8% of out-patient attendance, 10.6% of admission and 9.4% of maternal deaths (GHS, 2012).

Sulphadoxine-pyrimethamine (SP) is currently used for prophylaxis in pregnancy because it is safe in women of reproductive age and pregnancy, no bitter taste and delivered as a single dose under observation by a health worker (UNFPA, 2011). In 2005 Ghana implemented the IPT of malaria control programme (IPTp), (GHS, 2006)

1.2 Problem Statement

Malaria is one of the public health problems worldwide. It is the leading cause of death and disease in many developing countries including Ghana. There are over 300-500 million malaria cases reported worldwide resulting in an annual deaths of over one million. Majority of these cases are from Africa (WHO, 2008). The fight against malaria has been in the fore front globally in order to decrease its burden on nations. It is estimated that 6% to 28% of the malaria burden occur in cities and towns (Breman et al., 2004). Many intervention strategies have been put in place to bring a stop to the increasing incidence of malaria among populations. However, despite these interventions, the disease has continued to remain a serious public health concern. Due to the complications that malaria causes among pregnant women, the WHO came out with the Intermittent Preventive Treatment for malaria in pregnancy (WHO, 2014). This was aimed at preventing malaria infection among pregnant women. The problem is that Bekwai Municipality recorded the second lowest uptake of IPT Services (26.5%) among all the districts of Ashanti Region for the year 2012 despite the health education given by the nurses on the IPT programme (Bekwai Municipal Health Directorate, 2012). In 2013, the IPT uptake among the pregnant women who attended ANC in the Municipality were

as follows: 88.4%, 74%, and 54.4% on the first, second and third trimesters respectively (Bekwai Municipal Health Directorate, 2013).

Low uptake of IPT services can lead to high malaria cases among pregnant women which could culminate into low-weight of births, higher number of stillbirths, spontaneous abortion, asymptomatic infection, with potential results being maternal anaemia and placental parasitaemia, premature delivery and maternal and infant deaths. No study has been conducted in the Municipality to discover or unearth the reasons for the low uptake of IPTp services. There is

therefore little information regarding the factors that are responsible for this situation. This study therefore seeks to identify factors and their relative contribution to low uptake of IPT services among women in the Bekwai Municipality.

1.3 Research Question

What are the factors that influence uptake of IPT services among pregnant women in the Bekwai Municipality?

1.4 Main Objective of the Study

The general objective of the study was to investigate factors that influence the uptake of IPT services among pregnant women in the Bekwai Municipality

1.4.1 Specific Objectives

The specific objectives of the study are;

i. To assess the current uptake of IPT service among pregnant women in the Bekwai Municipality

ii. To determine the relationship between ANC attendance and the uptake of IPT services in the Bekwai Municipality

iii. To examine the relationship between women's economic status, age, parity and educational level and the uptake of IPT services in the Bekwai Municipality

iv. To identify barriers to the uptake of IPT services among pregnant women in the Bekwai Municipality

1.5 Conceptual Framework

The study was conducted using this conceptual framework as the guide giving direction to the study. The main concepts assessed by the study were antenatal care services utilization, adequacy of antenatal care services utilization, use of IPTp services, determinants of IPTp services utilization and the relationship between socio demographic factors and the use of IPTp services among pregnant women.

The WHO in the year 2000 recommended that pregnant women should initiate ANC within the first trimester of pregnancy and should also make a minimum of 4 ANC visits before delivery. Since the uptake of IPTp services is done at the Reproductive and Child Health (RCH) centers during ANC sessions, this study assessed the relationship between the number/frequency of ANC visits with the uptake of all the three doses of SP among pregnant women. Pregnant women who take all the three SP doses have some individual factors that influence their ability to adhere to the three doses of SP, this study assessed the relationship between their socio-demographic characteristics and the uptake of the three SP doses.

Several studies by the WHO and UNICEF have attributed some contextual community factors that hinder the uptake of maternal health care services especially those living in rural areas. The relationship between distance to health facility and the use of ANC services which has a direct effect on the uptake of all the SP doses was assessed by the study as shown in figure 1.1 below.

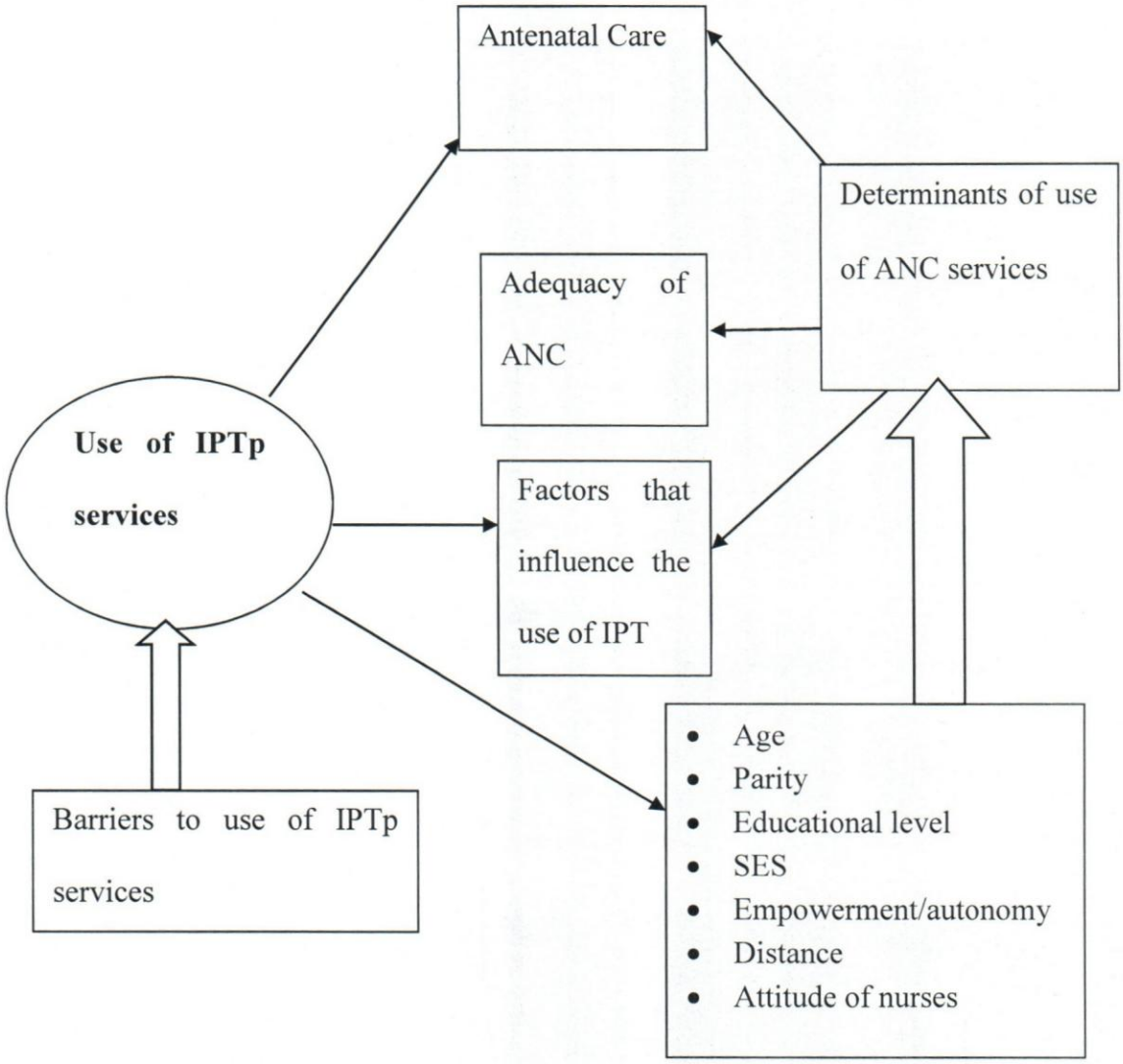


Fig1.1 Conceptual framework of the factors influencing the uptake of IPTp services among pregnant women

1.6 Relevance of the Study

The Ashanti region was reported to have experienced high maternal and infant mortality ratios in the year's 2012 and 2013 (Ghana News Agency, 10th Feb., 2014). This has necessitated health care providers to device ways to curb the trend in the region. Since Bekwai Municipality forms part of the region, its relative contribution to maternal and child mortalities is inarguably high. This study would therefore provide a data base as basis for a policy direction by healthcare providers in the Municipality and the region as a whole.

The Millennium Development Goals 4 and 5 aims at reducing maternal and child mortalities and to improve maternal; and child health. Ghana is therefore striving to meet the MDG 4 and 5 as the 2015 is getting closer to reduce maternal and infant mortalities. The findings of this study will therefore contribute to data with regards to maternal and child health improvement in the country.

1.7 Operational definition of terms

Intermittent Preventive Treatment: The process where pregnant women are given Sulphurdoxine-Pyrimethamine to prevent malaria in pregnancy

Uptake of IPTp: The implementation of the IPTp by health service providers resulting in women who are pregnant taking Sulphurdoxine-Pyrimethamine under direct observation by qualified health personnel at antenatal clinics (ANC)

Antenatal care: Care received by pregnant women from health care providers during pregnancy

1.8 Organization of the Thesis

This dissertation is organized into six chapters.

Chapter one includes the introduction to the study, background to the study, the problem statement, the study objectives, the significance of the study, conceptual framework and the operational definition of terms of the study.

The second chapter reviewed relevant literature in relation to the study. Chapter three is made of the methodology, which is comprises the study design, study type, study variables (independent and dependent variables), data collection instruments, sampling procedure and sample size, study population, data collection methods, determination of educational level, determination of maternal autonomy, quality control measures, ethical considerations as well as plan for dissemination of results.

The fourth chapter contains the results and findings of the study whilst the discussion of the results and findings of the study is done in chapter five. The conclusion and recommendations of the study are also presented in chapter six. A sample of the study questionnaire is presented as an appendix.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant literature in relation to global burden of malaria in pregnancy, use of IPTp services and the determinants of the uptake of IPTp services. Literature was reviewed in direct relation with the study objectives and the conceptual framework of the study of the study. The literature review was done by comparing the burden of malaria in various countries and the uptake of the IPTp services in these countries.

2.1 Global Burden of Malaria

The World Health Organizations' (WHO) World Malaria Reports for three consecutive years: 2010, 2011 and 2012 stated that malaria remains a key public health issue globally claiming the lives of many people in the world. The 2012 report of the World Health Organization stated that about 3.3 billion people in the world were at risk of malaria infection by the end of 2012 (WHO, 2012). The reports consistently showed that Africa bears the heaviest burden and the highest risk of malaria infection. Again, the 2011 report of World Health Organization stated that about 80% of the reported malaria cases and about 90% of the reported deaths from malaria occur in Africa, with children below five years and pregnant women living in malaria-endemic regions suffering the most.(WHO, 2012).

A report by UNICEF (2013) stated that malaria is estimated to cause between 300 and 500 million clinical cases with about 700,000 to 1.6 million deaths every year. Again, most of these deaths are said to occur in sub-Sahara Africa.

Studies by the WHO (2010) showed that five species of parasites cause malaria, however, one species thus *Plasmodium falciparum* accounts for about 90 to 98% of all malaria infections in the African region. The anopheles female mosquito is the vector responsible for the transmission of *Plasmodium falciparum* parasite to humans through its bite.

Malaria control still remains a challenge in Africa where 45 countries, including Nigeria, are endemic for malaria, and about 588 million people are at risk (WHO, 2012). The WHO further reported that the protection of pregnant women living in malaria endemic countries has been of particular interest to many National Malaria Control Programmes because of the reduction in immunity associated with pregnancy. According to Meeusen et al. (2001) the reduction in cell-mediated immunity is a physiological response that allows foetal allograft retention, but it is thought to also interfere with resistance to various infectious diseases.

In malaria endemic regions, individuals are constantly exposed to malaria parasites through the bites of infected female Anopheles mosquitoes. This frequent exposure leads to the development of an effective anti-disease immunity to malaria, which prevents life-threatening parasite burdens and suppresses the pro-inflammatory responses which cause illness (Riley et al., 2003).

Malaria affects all the countries in Africa. In the World Malaria Report 2012, Nigeria accounted for a quarter of all malaria cases in the 45 countries endemic for malaria in Africa. In Nigeria, 11% of maternal deaths are attributed to malaria (Federal Ministry of Health (FMOH)(2012).In Kenya, malaria is reported to be the leading cause of morbidity and mortality with about 74% of the population being at risk of infection (Marchant et al.,

2008). They reported that Kenya has four malaria epidemiological zones based on the transmission risk, namely, endemic, highland epidemic prone, arid seasonal and low risk. Olliaro et al. (2008) also stated that although about 29% of the population of Kenya resides in malaria-endemic zones, seasonal epidemics of malaria in the highland and arid zones confer negligible immunity; thus, making the native population vulnerable to malaria. According to their study clinically diagnosed malaria in public health facilities in Kenya accounts for about one-third of outpatient consultations, 19% of hospital admissions and 3-5% of inpatient deaths.

The Kenyan Ministry of Public Health and Sanitation (2009) asserted that malaria is not only a public health challenge in the country, but also an impediment to economic productivity at the household, community and national levels. This has therefore necessitated the government to consider malaria control as a priority investment, necessary for the realization of the Kenya Vision 2030. This concerted effort by the Kenyan government is needed to fight against malaria infection.

In Ghana malaria accounts for about 32.5% of all Out Patient attendances and about 24.6% of deaths in children under 5 years. In Ghana, malaria is hyper endemic in all parts of the country,

with the entire population of about 23.5 million at risk (Ghana Health Service, 2008). Transmission occurs all year round with seasonal variations during the rainy season. According to the Ghana Health Service (GHS, 2008), malaria is the number one cause of morbidity, accounting for about 38% of all outpatient illnesses, 36% of all admissions, and 33% of all deaths in children under five years (GHS, 2008).

2.2 Malaria in Pregnancy

The WHO (2012) reported that globally about 50 million women become pregnant each year, of which more than one-half reside in Africa. The WHO report further stated that the African continent is also reported to have the highest risk of malaria infection. Infection of pregnant women with malaria is highly risky for the mother and her fetus, particularly due to low levels of immunity. It has been estimated by the UNFPA (2013) that malaria accounts for about 10,000 maternal deaths and about 200,000 fetal and infant deaths annually, with severe malarial anaemia contributing to more than one-half of reported deaths.

The negative impact of malaria in pregnancy has been extensively studied (Brabin, 1983; McGregor et al., 1983; Steketee et al., 1996; Shulman et al., 1999, 2001; Rogerson et al., 2000). These studies have shown that effective antimalarial drugs can have an impact on malaria, but several logistical and other constraints have hampered out-reach and compliance in many malaria endemic areas. In addition, the decreasing efficacy of several first-line antimalarial drugs further complicates delivery (Menendez, 1999). Intermittent preventive treatment (IPT) (full therapeutic doses), given at defined intervals, has potential benefits, and is a promising strategy to control malaria (Garner & Gulmezoglu 2001; Newman et al., 2003; Greenwood, 2004). Studies conducted in Kenya, Malawi and elsewhere have shown that IPT with sulphadoxine-pyrimethamine (SP) given twice during pregnancy can reduce malaria episodes, severe anaemia and improve birth weight (Schultz et al., 1995; Parise et al., 1998; Rogerson et al., 2000; van Eijk et al., 2004; Kayentao et al., 2005). In Kenya, Shulman et al., (1999) clearly demonstrated that

IPT with SP, given several times in pregnancy when women attend antenatal care (ANC), can reduce severe anaemia among primigravidae by 39%.

According to Steketee et al. (2005), malaria in pregnancy accounts for 5 to 12% of all low-weight births. They further reported that severe malaria is associated with stillbirths, spontaneous abortion, premature delivery and maternal death in low risk zones. However, in high-risk areas, women are said to be susceptible to asymptomatic infection, with potential results being maternal anaemia and placental parasitaemia. The two situationsare reported to be highly conducive for low birth weight and subsequently, infant mortality.

A study by Staalsoe et al. (2004) indicated that during pregnancy, there is an acquired semi-immunity which is able to keep malaria infection at an asymptomatic level in the majority of malaria cases. According to their study, depending on the endemicity of malaria in the area where the pregnant woman lives, it can be expected that 1-50% of pregnant women may carry malaria parasitaemia, especially in the placenta, without noticing it or without the malaria showing symptoms. Opiyo et al. (2007) also asserted that during pregnancy, the subclinical infection still poses a great danger to both the mother and the foetus. It is reported by their study that, the principal impact of malaria infection in pregnancy is due to the presence of parasites in the placenta causing maternal anaemia (potentially responsible for maternal death when severe) and low birth weight (LBW), a major predictor of infant and neonatal mortality.

Anorlu et al. (2001) reported that the focus of malaria prevention during pregnancy has been the use of antimalarial chemoprophylaxis and the use of insecticide treated nets

(ITNs). They stated that pregnant women on antimalarial chemoprophylaxis are at a reduced risk of the harmful effects of malaria, while ITNs reduce human contact with mosquitoes leading to a significant reduction in the incidence of malaria, severe morbidity and mortality due to malaria, as well as helping reduce the adverse effects of malaria during pregnancy in an area of intense malaria transmission.

Intermittent Preventive Treatment of malaria in pregnancy (IPTp) is one of the key interventions recommended by WHO to bolster the prevention of asymptomatic infections among pregnant women living in moderate to high-risk regions (WHO, 2007). Since the implementation of this intervention programme, many countries have adopted it and it is being practiced by health facilities rendering prenatal care services to pregnant women. Owing to the importance of IPTp in the prevention of malaria, Mpungu and Mufubenga (2008) recounted that the African Summit on Roll Back Malaria, was organized in April 2000 which set the IPTp2 coverage target at 60% by 2005, but in the same time the global target was pegged at 80% coverage by the year 2010. After the African Summit on Roll Back Malaria, many of the African countries started implementing and expand their coverage on the IPTp. For example in Kenya, the government's policy on IPTp states that all pregnant women living in malaria-endemic zones should receive sulfadoxine-pyrimethamine (SP) for prevention of malaria during pregnancy. In this regard, all pregnant women are expected to receive the first dose of three tablets (IPTp1), which providers administer under their direct observation at the antenatal care (ANC) facilities within the 16th week of gestation. Recipients of IPTp1 are to access subsequent doses during each of the scheduled monthly visits to ANC facilities (Kenya National Bureau of Statistics and ICF Macro, 2010). In this regard, Ouma et al.

(2007) reported that all pregnant women in Kenya are required to access the second dose (IPTp2) within the 20th week of pregnancy. They posited that WHO recommends a minimum of IPTp2 protection against malaria for women residing in high risk regions. The Kenyan Ministry of Public Health and Sanitation (2009) set the target for IPTp coverage for the period of 2009-2017 at 80%. However, this target was criticized by van Eijk et al. (2010) to be unrealistic. Their study was on the implementation of IPT for malaria control in Western Kenya in which they found that no Sub-Saharan African country has been able to expand IPTp coverage to 80%. They argued that the uptake of IPTp in the Sub-Sahara African countries remains below the international targets.

2.3 Factors that Influence Malaria Infection during Pregnancy

Adam et al. (2005) and Marielle et al. (2003) in their studies conducted in Gabon and Sudan found that maternal age was associated with malaria prevalence during pregnancy. Their studies showed that a pregnant woman of young maternal age is at the greatest risk of malaria infection, as well as having the highest parasite densities. Similar findings were reported by Chimere and Wellington (2013) in Nigeria where they reported that malaria prevalence in pregnancy is associated with maternal age.

According to TerKuile et al. (2003) the effects of malaria in pregnancy have been noted to be lower in multigravidas than in other gravidities as a result of acquisition of specific immunity to placental malaria due to previous exposure. The study reported that acquired specific immunity accumulates with subsequent infection and subsequent pregnancies. However, Chimere and Wellington (2013) in their study did not find any association between gravidity and malaria prevalence or the level of parasitaemia. They rather found that young maternal age was seen to be a more important risk factor than

gravidity which corroborated the findings of Tako et al. (2005). They again established that the level of acquired immunity is associated with the number of malaria infections during pregnancy.

Moreover, a study by Elliott et al. (2005) observed that women in their second pregnancies are almost as susceptible to malarial infections as those that are pregnant for the first time. They therefore suggested that early attendance and participation in focused ANC services is recommended to all pregnant women especially the primigravidae so as to reduce the risk of malaria infection in pregnancy.

In another dimension, Adam et al. (2005) observed that education and the gestation ages of the women at the time of registration for ANC at the clinics are not significantly associated with malaria infection during pregnancy. They explained that the educational level of a pregnant woman has nothing to do with malaria infection during pregnancy. This was attributed to massive radio and television campaigns on malaria prevention strategies and appropriate treatment options in every area which gives every pregnant woman the opportunity to hear these messages in their own dialects at every community. The campaigns are also regular features in child welfare clinics all over every health facility.

Steffenet al. (2003) observed that the use of insecticide spray was associated with malaria prevalence among pregnant women. They found that women who used insecticide spray more than once a week had a lower prevalence of malaria infection. The use of insecticide treated nets (ITN) was also found to be associated with malaria infection. Their study found that use of ITNs was high among pregnant women. There is a higher

prevalence of malaria in pregnant women that use an ITN as opposed to those that use any net. However, Ankomah et al. (2012) stated that net ownership does not necessarily translate to usage.

2.4 Use of IPTp-SP among Pregnant Women

According to Anders et al. (2008) the cost of treatment of malaria in infants who are the most vulnerable age group, can result in serious economic implications on households and the health system. They therefore argued that there is a need for malaria prophylaxis interventions that reduce its health problems and its social and economic costs.

Intermittent Preventive Treatment in infants (IPTi) is a malaria prophylaxis strategy consisting of intermittent administration of three doses of a long-lasting anti-malaria drug, sulphadoxine – pyrimethamine (SP) to infants in the 1st year of life through the routine immunizations of the Expanded Programme of Immunization (EPI) concomitantly with the DTP2, the DTP3 and measles vaccinations. Children receive ¼ or ½ of one tablet of SP (containing 500 mg of sulphadoxine and 25 mg pyrimethamine) at approximately the ages of 3, 4 and 9 months, in the health facilities where immunizations are offered. IPTi with SP has shown to reduce infant's clinical malaria by 30.3%, anemia by 21%, and hospitalizations associated with malaria parasitemia by 38% during the first year of life (Aponte et al., 2009).

IPT consist of administration of a treatment dose of an effective anti-malarial drug (or drug combination) at predetermined time points or intervals, to a specified at risk population, regardless of parasite burden or symptoms (Gysels et al., 2009). According to Ahorlu et al., (2009), the concept has been accepted as an important component of the

malaria control strategy. Their study indicated that IPT given with childhood vaccinations reduced incidence of first episode of malaria and also reduced severe anaemia by more than 50% during the first year of life. They also established that IPTp is very effective studies in areas with seasonal malaria transmission. IPTi was recommended by WHO and endorsed by the Expanded Programme on Immunization (EPI) and UNICEF (de Sousa et al., 2010) for implementation at scale in malaria endemic countries.

Sicuri et al. (2010) reported that IPTp-SP be avoided in the first trimester of pregnancy. However, they said that there is limited evidence of potential teratogenicity when SP is used in the first trimester. They proposed that, until more safety data becomes available, this medicine should not be used during the first trimester. They advised that pregnant women should protect themselves against malaria during the early weeks of pregnancy by using insecticide-treated nets. According to their study, IPTp-SP can be administered safely at the beginning of the second trimester, starting at the beginning of the 13th week.

According to the WHO (2010) guidelines for the treatment of malaria in pregnancy, the second trimester begins at 13 weeks. In the absence of gestational dating by ultrasound, the beginning of the second trimester can be determined by measuring fundal height which may serve as a proxy for gestational age. The guidelines stated that the fundal height corresponds to the distance between the symphysis pubis and the top of the uterus, in centimetres. According to the report, at the beginning of the second trimester around 13 weeks of gestational age, the fundal height is around 13 cm.

A new policy by the WHO (2012) recommends that SP should be given at each scheduled ANC visit except during the first trimester, and it can be repeated every month

with the doses given at least one month apart until the time of delivery. The previous WHO policy recommendation proposed that IPTp-SP be delivered at each ANC visit in order to ensure that pregnant women received at least two doses of SP. However, this resulted in many countries adopting a policy that recommended the administration of SP only twice during pregnancy. The new WHO policy recommendation calls for the administration of IPTp-SP at each ANC visit, starting as early as possible during the second trimester. This recommendation reflects the need to increase in the number of SP doses. According to the report, this new policy was based on the most recent evidence that among pregnant women in sub-Saharan Africa, intermittent preventive treatment in pregnancy with 3+ doses of SP was associated with a higher birth weight and lower risk of LBW than compared to the standard two-dose regimens. UNICEF (2012) also stated that the new policy does not refer to a specific number of doses, as experience has shown that once the policy states a specific number of doses, even if qualified (e.g. "minimum of 3 doses," "3 or more doses," or "at least 3 doses"), this becomes a programmatic target for many countries. The new policy, calling only for administration of IPTp-SP at each ANC visit except during the first trimester and with the doses given at least one month apart until the time of delivery, is not restrictive and the implementation can be modified should the number of recommended ANC visits increase in the future. Taylor et al. (2012) observed that the new policy does not recommend a maximum number of doses of IPTp-SP, as previously noted. They argued that SP can be safely administered from the beginning of the second trimester until delivery, provided that doses are given one month apart. Interestingly, their study reported that the last dose of SP can be administered up to the time of delivery without safety concerns. They admitted that previously there was a

concern that the administration of SP late in pregnancy could result in kernicterus. However, review of the evidence suggests that there is no clinical association between SP use and kernicterus, despite the extensive use of SP and related compounds to prevent maternal malaria and treat congenital toxoplasmosis in near-term pregnant women and newborns.

According to terKuile et al. (2007) the treatment efficacy of SP is determined by testing how well the medicine works to cure malaria in young children, who have very little immunity to malaria. Evidence from their study shows that SP prevents consequences of malaria in pregnant women who have already had a number of malaria infections and thus a certain level of immunity. Their study further stated that SP primarily works through a prophylactic effect.

For the treatment of uncomplicated malaria, WHO (2010) recommends different medicines during the first, second and third trimester. The use of SP monotherapy according to the WHO should be restricted to pregnant women for IPTp-SP only; this will also prevent IPTp-SP stock-outs in facilities, which are often due to misuse of SP for treatment of uncomplicated malaria. Menéndez et al. (2013) established that SP is associated with higher mean birth weight and fewer low birth weight births across a wide range of SP resistance levels. They said that even in areas where a high proportion of *P. falciparum* parasites carry these quintuple mutations, IPTp-SP remains effective in preventing the adverse consequences of malaria on maternal and fetal outcomes.

Another studies conducted by Ahorlu et al. (2011) established that a two year intermittent preventive treatment for children (IPTc) study combined with timely home

management of malaria for children under five years of age also indicated that the malaria parasite prevalence reduced drastically from 25% to 3.0% at year one evaluation and further from 3% to 1% at year two. Their study also showed that 13.8% of the children were febrile (axillary temperature of ≥37.5°c) at baseline compared to 2.2% at year-one-evaluation, while 2.1% were febrile at year-two evaluation. They therefore concluded that, IPTc given three times a year (every four months) combined with timely home treatment of febrile malaria illness, is effective to reduce malaria parasite prevalence in children aged 6 to 60 months.

2.5 Knowledge about IPT

A study conducted in two health facilities in rural Nigeria (2009) showed that 23.9% of the pregnant women who have heard about IPTp were able to give a good definition of IPTp, furthermore only 52.3% had received at least one dose of SP during their pregnancy and 40% were afraid of taking the drug during pregnancy (Ehijie et al, 2007). This shows that pregnant women's knowledge on the IPT subject is an issue that needs to be addressed to increase coverage. In order to ensure that pregnant women get the right information on IPT, health care workers need to have proper knowledge such that they transfer that knowledge to the target group appropriately. A study done in one of the districts in Ghana found that all of the staff interviewed knew of when to start IPTp, reason for the timing of IPTp and the number of doses (frequency) of SP to be given during pregnancy. Only 18 (60.0%) knew when to stop giving SP. The level of knowledge of the side effects of SP was low as only 11 (36.7%) knew of all the common side effects of SP to be expected. Also, only 17 (56.7%) knew of all the important contraindications to giving SP during pregnancy (Antwi, 2010).

2.6 Acceptance of IPT

While a study conducted in Malawi evaluating IPT showed a decline in placental 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(Van Eijk et al., 2011). several other studies viewed SP as harmful, suggesting that it caused miscarriages and side effect that included mouth sores, fatigue, fever, rashes and itchiness, however these studies suggested that although these perceptions exist, there were very few cases of adverse effects, and that these ideas were based on hearsay rather than personal experience (Mubyazi et al., 2008).

While empirical evidence from Kenya and Malawi indicate high efficacy of IPTp in reducing anaemia during pregnancy and increasing birth weight, reports on treatment failures and parasite resistance to SP in malaria endemic countries has stimulated debates about the appropriateness of SP and has prompted some African National Malaria Control Programs (NMCP) to recommend combination therapy . Depending on further scientific documentation on safety and efficacy in pregnancy, artemisinin-based combination therapy (ACT) may be a useful alternative to SP in the future (Mubyazi et al., 2005).

2.7 Provision of IPT at ANCs

It is possible that shortage of human resource, lack of qualified personnel and continued education and high patient load in public settings hamper the provision of other important health services including proper ANC interventions. Three national household and

facility surveys conducted in Tanzania between 2005 and 2007 revealed that women who reported attending an antenatal clinic when they were pregnant, who said they had not received the first dose of IPTp, were asked why they had not, over 90% reported that they had not been asked whether they wanted it (Marchant et al, 2008). It was also noted in a qualitative study conducted in Korogwe district that poor quality of healthcare services contributed to poor attendance of pregnant women at health facilities providing ANC services (Nguyen et al., 2008). Women are disappointed when; they wait longer at the service delivery point, are mishandled by nurses, and lack of diagnostic facilities. These factors affect women's attendance of ANC for fear of the lack of privacy at the consultation or bad language of the nurses, unfriendly opening hours and/or unfair and unexpected costs (Mboera et al., 2005). The need for the skilled ANC staff in the health-care system is one of the prerequisites for attracting women to clinics. Provision of poor quality of health services is said to be very common in rural settings, it would be of interest to find out whether the conditions are any better in urban settings.

2.8 Availability of visual aid and health education materials

Availability of clear messages that provide IPT knowledge is critical for making sure that pregnant women are sensitized about IPT every time they come to clinic. In Tanzania, available information indicates that health education and information communication provided to the community has had limited impact on behavioral changes and hence disease prevention and control. In part, this is due to the ineffective communication strategies used in health education communication programs between systems and between systems and providers (Tarimo, 2007). Although various studies in the country

have indicated that healthcare facilities are the most reliable source of health education, such facilities are often not accessed by many people particularly in rural areas because of healthcare charges, long distances, inadequate and unaffordable transport systems, poor quality of care, equity, poor governance, and inadequate human resource (Tarimo, 2007). In another surveillance study in Tanzania, the results showed a decline in the percent of facilities displaying posters explaining the purpose and benefits of IPTp from 70% in 2005 to 50% in 2007 (Ehije et al., 2007)

2.9 Coverage of IPT.

In an analysis of national survey in Africa in 2007, low coverage with intermittent preventive treatment and insecticide-treated nets was found to contrast with high antenatal-clinic attendance, an estimated 25% of 25·6 million pregnant women received at least one dose of treatment and 19·8 million (77%) visited an antenatal clinic (31 countries). It was also found that estimated coverage was lowest in areas of high-intensity transmission of malaria. This finding suggests that there are missed opportunities when women attended clinics but are not given intermittent preventive treatment (or insecticide-treated nets). Factors identified to influence coverage include unclear messages about intermittent preventive treatment in pregnancy, especially about timing of the doses, Sulfadoxine–Pyrimethaminestock outs, limited understanding of intermittent preventive treatment, late enrolment or irregular antenatal clinic visits, and nurse underachievement (Ankileye et al., 2009).

The 2008 GDHS showed that the Percentage of last births in the 2 years preceding the survey for which the mother got at least one dose of SP/Fansidar during an antenatal visit was 63.9 for urban areas and 58.9 for rural areas, while the Percentage of last births in the 2 years preceding the survey for which the mother got complete intermittent preventive treatment (IPT) during an antenatal visit was 29.6 in urban areas and 24.8 in rural areas (GDHS, 2008).

In a study conducted in Kibaha district in Tanzania, about a third (40.0%) of the mothers did not receive SP for IPT because of unavailability. Of those receiving, about a third (40.0%) did not swallow the tablets at the clinic because of empty stomach and sharing of water cup (Tarimo, 2007). Another study conducted in Kilombero valley showed that among all women eligible for IPTp, 79% received a first dose of IPTp and 27% were given a second dose. Although pregnant women initiated ANC attendance late, their timing was in line with the national guidelines recommending IPTp delivery between 20-24 weeks and 28-32 weeks of gestation. Only 15% of the women delayed to the extent of being too late to be eligible for a first dose of IPTp. Less than 1% of women started ANC attendance after 32 weeks of gestation (Gross et al., 2011). It has been observed that good access to ANC does not warrant high uptake of IPTp-SP, since quality of care delivery factors, health care workers' knowledge and motivations, and target population's knowledge, attitudes towards IPTp and practices remain important (Mubyazi et al., 2008). With all these findings from different studies and their recommendations, one would expect to see a remarkable change in IPT uptake over the past ten years. However this has not been observed, it is very possible that there are other underlying factors that need to be addressed or it could be that the efforts that are in place for IPT implementation need to be strengthened.

2.10 Determinants of the Uptake of IPTp

The IPTp uptake is a subject that has attracted many empirical investigations, at the community, national and regional levels, particularly in Africa. In Ghana, for instance, Atwi et al. (2007) found that personal attributes such as marital status and education level influenced the IPTp uptake. In this regard, the study noted that the IPTp uptake was significantly higher among participants with university education than those reporting primary education. In Uganda, Mpungu and Mufubenga (2008) noted that lack of post primary education significantly associated with the failure of pregnant women to access $IPTp_1$. Contrastingly, in Tanzania, Marchant et al. (2008) reported lack of significant association between the uptake of $IPTp_2$ and factors such as age, marital status and education level. The study noted that women having less than primary education were about three times more likely to default in subsequent ANC visits than those reporting secondary education or higher.

In Senegal, Olliaro et al. (2008) reported that the timing of IPTpis directly linked to the onset of ANC visits. They again found that delayed attendance of ANC contributes to non-completion of IPTp doses. In this regard, 45% of the participants initiated ANC attendance in the third trimester and only 23.7% received $IPTp_2$. The timing of first visits to ANC clinics also influences the IPTp uptake. In this regard, Anders et al., (2008) found that even though 48% of the participants started ANC visits before the 16_{th} week of pregnancy, up to 86% of this lot did not receive $IPTp_1$ because the gestation period was below the recommended 16 weeks. Those who did not receive proper explanation of this policy requirement were discouraged and failed to turn up for subsequent appointments.

Furthermore, Nankwanga et al. (2008) conducted a study and concluded that IPTp uptake is significantly associated with distance to ANC facilities, domestic chores and absence of health issues during pregnancy, as well as gravidity. Hence, primigravid women are more likely to attend ANC in time for IPTp doses than multigravid women. Their study noted that first-time pregnant women sought medical assistance earlier than experienced mothers, to pacify anxiety arising due to sudden physiological changes. Previous studies by Nganda et al. (2004) also observed that the IPTp uptake is significantly associated with women's knowledge regarding IPTp. In their study, they found that only 21% of their study participants had received information about IPTp, of which only 31.5% knew the recommended drugs for IPTp and only 4.5% knew the recommended dose. The study found that over 60% of the participants did not receive health education on IPTp, resulting to low IPTp coverage.

Other studies by Enato et al. (2007) and Nganda et al. (2008) also observed that knowledge about IPTp is low among pregnant women in developing countries, which suggests that ANC facilities are not doing enough on sensitization. They linked the knowledge gap to late and inconsistent ANC attendance.

The quality of services at health facilities is also a key factor influencing the IPTp uptake. For instance, a study conducted by Olliaro et al. (2008) reported that most public health facilities in Ghana (94.1%) provided IPTp services. However, 27% of the facilities had experienced SP stock-outs over the preceding six months period, which significantly undermined the delivery of IPTp services. On the same note, Mubyazi et al. (2005) found that recurrent SP stock-outs, inconsistent supply of clean drinking water and inadequacy of clean cups were some of the facility factors influencing the IPTp uptake. Furthermore,

Hill and Kazembe (2006) reported that negative attitudes towards late ANC attendees discouraged subsequent visits for IPTp services. Their study also noted that prolonged waiting time, mishandling by nurses and lack of diagnostic facilities discouraged women from seeking ANC services.

According to Mboera et al. (2007) the uptake of IPTp is significantly associated with women's background attributes, including marital status, parity, education level, occupation and income level. They also found that IPTp uptake is influenced by age. The analysis also revealed independent variables such as the onset of ANC visits, distance to health facilities, partner support, and perceptions about the duration at health facilities, health providers' attitude and main source of health information.

2.11 Factors that influence the use of Antenatal services

Belay et al. (2006) stated that research on the use of prenatal care tends to focus on women's characteristics, including whether or not the pregnancy was wanted. Women who wanted to get pregnant or planned a pregnancy tend to be more highly motivated to seek prenatal care in order to ensure a healthy birth, than women who did not want the pregnancy. According to them studies of maternal health-care utilization consistently find that pregnancy resulting from a woman's conscious will is an important determinant of using prenatal care. Women's health seeking behavior, however, is influenced by intervening social relations that may prescribe the range and extent of their autonomous action.

According to Griffiths and Stephenson (2001) in traditional societies where restrictions are placed on women's freedom of movement and contact with unrelated men, a

husband's attitude toward prenatal care may be an important factor in determining whether prenatal care is received. While men's approval of formal prenatal care may be culturally patterned along ethnic and religious lines, there may also be significant variation within ethno-religious groups based on levels of education, exposure to modern healthcare practices, individual interpretations of religious values and adherence to traditional beliefs.

Overbosch (2002) then argued that having a husband who approves of prenatal care significantly increases the likelihood that a woman uses prenatal care, irrespective of the husband's background characteristics. Therefore, it is expected that a husband's approval will have less influence on the use of prenatal care among older and more educated women than among younger women and women who have little or no education.

The identification of socio-cultural barriers to the utilization of maternal health-care services is an important component in the design of effective strategies for increasing prenatal care utilization (Royston and Armstrong, 2000).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The methodologies that were used to collect and analyze the data in this study have been presented in this section. A description of the study area is given in this chapter and also the sample size and sampling procedure are stated in this chapter.

3.1 Study Area

The study was conducted in Bekwai Municipality of the Ashanti Region with its capital in Ashanti Bekwai. Ashanti Bekwai is the capital town of Bekwai Municipality – it is one of the ancient towns in the Ashanti Region of Ghana. Bekwai Municipality is one of the largest Districts in the Ashanti Region. Out of the District, two other districts have emerged namely: Amansie Central District, and the latest one, BosomeFreho District. The municipality now shares boundary with Bosometwe in the North, Adansi North at the South, BosomeFreho at the East and Amansie Central/West at West. The size of the Municipality is about 633sqkm (www.ghanadistricts.com)

Health wise, the municipality has been divided into 4 sub-municipalities. These included Bekwai, Dominase, Kokofu, and Kortwia sub-municipalities. The Bekwai Municipality has a total of 135 communities with a total population of 124,484. The main occupation of the citizens includes farming and trading. The major crops grown here are plantain, cocoyam, cassava, fruits and vegetables. Cash crops grown in the municipality include the following: cocoa, palm nut, coco nut and cashew. The people trade mostly in farm products and clothing materials. Provision stores are also found on the municipal capital-Bekwai (Municipal Health Directorate, 2012)

Bekwai market serves as the main market centre of the Municipality. There are other smaller trading centres in the various communities within the municipality. A small proportion of the population also engages in white color jobs.

There are Eleven (11) health facilities in the municipality. These facilities mainly provide clinical care, preventive services, and health promotion activities. However, Bekwai Municipal Hospital is the only facility, which offers Ear and Throat, Eye care services, general services and Nutritional Rehabilitation services.

Bekwai hospital is the only health facility providing mental health services in municipality. The unit is manned by three (4) registered mental health nurses and some rotation and student nurses.

3.2 Study Type

The study was a community-based cross sectional study conducted in 33 communities in the entire Municipality. The choice of the study being conducted in communities was informed by the fact that some of the women may not be present in the health facilities at the time of the survey therefore conducting it in the various communities reduced selection bias so that the results would not be skewed. UNICEF (1998) also adopted this type of survey in its Expanded Programme on Immunization to assess coverage of the programme.

3.3 Study Population

The study population was two months postpartum women. The choice of this group of women was informed by the fact that the WHO recommends every pregnant woman to take the first IPT at 16 weeks of pregnancy and the second at 20 weeks whilst the third

one should be taken before the 36th week of the pregnancy. To reduce recall bias, the study population was limited to women who have delivered within the past two months preceding the study.

Nurses at the Reproductive and Child Health centers were engaged in the study as key informants since they give the SP doses to pregnant women during antenatal care.

3.4 Sample Size Determination

The sample size for this study was calculated using the formula established by Cochran (1980) for determining sample size for all cross sectional studies. Cochran's formula takes into consideration parameters such as the level of significance desired, margin of error (sampling error), and the population prevalence of the attribute being investigated by the study.

In this study, a 95% level of confidence was used since the study used a mixed method (both qualitative and quantitative methods). Because categorical data was collected, a 5% margin of error was used. From the annual report of the Bekwai Municipality, the use of IPT services was found to be 26.5% which represented the population proportion of the study.

Incorporating these variables into the formula;

$N = t^2 * P (1-p) / m^2$

n = the sample size

z = the z-score of the confidence level (95%) = 1.96

p = the proportion of IPT services utilization in the Municipality (26.5%) = 0.265

1-P = the proportion of pregnant women who are using IPT services

m = the desired precision or margin of error (5%) = 0.05

Therefore, substituting the values in the formula gives the following:

$$n = \frac{1.96^2 \times 0.265 \times (1-0.265)}{0.05^2} = \frac{0.748}{0.0025} = 299.2$$

Making a 10% provision for dropouts in the study, the sample size then becomes 328 respondents.

3.5 Sampling Procedures

A community-based cross sectional survey was conducted in 33 communities of the Municipality. The choice of the number of communities is supported by the fact that a cluster sampling survey should not contain less than 30 clusters as proposed by UNICEF (1998) in their community based household surveys. Again, 10 respondents were interviewed in each of the 33 communities making the study to be 33 x 10 community based survey. The respondents chosen is also supported by the fact that a cluster should not have less than 6 respondents in cluster surveys as proposed by the WHO (1996) in the EPI.

3.6 Selecting the Starting Household

The first household/ starting household in each sampled community was selected from the centre of each community. In each community, a Community based health volunteer

(CBHV) used by the Ghana Health Service together with an interviewer/ data collector chose a starting location by going to a central location in the community. At the centre of the community, a travel direction was selected at random by spinning a pen. The team then moved in a straight line in a chosen direction and counted all of the households until the last was reached. Pieces of papers were numbered as per the results of the households counted and placed in an opened box and shake. The team then randomly chose a number from those in the box to represent the starting household for the survey. The number randomly chosen therefore corresponded with the starting house.

3.7 Selection of Subsequent Households

Systematic sampling technique was then used to select the subsequent houses of respondents. By this method the random-walk procedure was followed until such time that the required number of interviews were reached. This approach of selecting households has been reported to reduce similarity in responses by the interviewees (that is, reduced homogeneity) (Bennett et al., 1994). This is due to the fact that the houses are not sharing boundaries therefore it could reduce similarities in the responses. The next houses were selected if none of the women in the sampled household met the selection criteria.

3.8 Procedure for Selecting Individual Survey Subjects

Only two months postpartum women in the sampled households were eligible for interview. Only one eligible respondent was randomly selected for interview in any particular sampled household where there are more than one respondent eligible for the study or interview. In any chosen household where two or more respondents met the inclusion criteria the mother of the youngest child was interviewed.

3.9 Data Collection Method

Focus groups discussions and structured questionnaires were administered and interpreted in local language for easy understanding to those who could not understand and read English. The researcher employed research assistants and trained them to administer the questionnaires for the data collection. Pencils and files were provided for the data collection to ensure neat work and prevent difficulties. The research assistants were trained on how to encourage respondents to answer all questions in order to get the right data. The research assistants were asked to recount the answered questionnaires in order to make sure that they were intact.

3.10 Data Processing and Analysis

Data from the structured questionnaires for the postpartum and pregnant women were coded and entered in the Statistical Package for Social Sciences (SPSS) version 18.0 for analysis..

The data were analyzed using univariate and bivariate analyses where appropriate. Descriptive statistics were presented in the univariate analyses. Bivariate analysis was done to find association between the uptake of IPT services with quantitative variables such as education level of women, age of women, ANC attendance, economic status and knowledge level of danger signs of malaria.

Chi square values of these bivariate analysis were considered to be statistically significant with $P < 0.05$ and a significance level of 95 %.Independent variables found to be statistically significant at the 0.1 level based upon the results of the bivariate tests, were entered as potential variables included in a logistic regression models.

Statistical difference was considered significant if the P-value is less than 0.05 and 95 % Level of significance were calculated for all main outcome measures that met the normality and homogeneity criteria.

Multiple logistic regression analysis was done to find out the determinants of the uptake of IPT services.

The key informant interviews were analyzed using framework analysis.

3.11 Quality Control Measures

3.11.1 Training

There was training for research assistants who assisted in the data collection. This helped in ensuring consistency in the questioning during the interviews.

3.11.2 Pre-testing of questionnaires

The study questionnaires were pretested in the Amansie West District in a pilot survey.

3.11.3 Double entries of data

Double entry of data was done after which the two data sets were compared at the analysis stage. This helped in identifying some omissions during the data entry.

3.12 Ethical Considerations

Permission was sought from the Municipal Director of Health Services of the Bekwai Municipality before conducting the study. The questionnaires were approved by the Municipal Director of health services before they were administered.

An informed consent of the respondents was sought and in the consent form, the objectives and significance of the study clearly stated and explained to the prospective respondents.

Anonymity and confidentiality of the actual source(s) of information obtained from the study was ensured by not indicating the names of facilities and individuals who took part in the study. Names were not provided on the data collection tools and therefore no clues were provided for someone to trace the source of information.

CHAPTER FOUR

RESULTS

4.0 Introduction

The results and findings of the study are presented in this chapter. The results of the quantitative data are presented in tables and a graph representing the sample characteristics, antenatal care services utilization during pregnancy, factors that influence the use of IPTp services, barriers to the use of IPTp services and knowledge of women on IPTp. The qualitative data are presented in themes with some quotations from the discussants.

4.1 Socio Demographic Characteristics of Respondents

A total of 328 two-month postpartum women were interviewed. The mean age of the respondents was 29.4±3.4 years and majority of them were in the age group of 25-30 years. Most of the respondents forming 41.2% (135) were within the age group of 30-39 whilst 0nly 3.7% (12) were within the age group of 40-49. Majority of the women who formed 91.8% (301) were married with only 0.3% (1) widowed. The study found that most of the respondents forming 43.4% (142) were educated to the basic level whilst 29.8% (98) did not receive any formal education as shown in table 4.1 below. The proportion of respondents who were educated to the tertiary level was 12.5% (41).

Again, majority of the respondents representing 82.0% (269) were Christians whilst 11.6% (38) were Muslims. Akan's dominated the study sample forming 64.3% (211) of the study sample. The study assessed the gravidity of the respondents and found that most of the respondents representing 39.9% (131) were multigravidae whilst 26.3% (86) were

secundigravidae. The proportion of primigravidae in the study sample was 33.8% (111) as shown in table 4.1 below.

The study found that 42.9% (141) of the respondents were petty traders whilst 17.1% (56) were civil/public servants. The proportion of respondents who were into agricultural activities was 19.8% (65) as represented in table 4.1 below.

Table 4.1 Distribution of Socio demographic characteristics of respondents

Variable	Frequency (n)	Percentage (%)
Age		
16-20	58	17.7
21-29	123	37.5
30-39	135	41.2
40-49	12	3.7
Total	**328**	**100.0**
Marital Status		
Single	25	7.6
Married	301	91.8
Widowed	1	0.3
Divorced	1	0.3
Total	**328**	**100.0**
Educational Level		
Illiterate	98	29.8
Basic	142	43.4
Secondary	47	14.3
Tertiary	41	12.5
Total	**328**	**100.0**

Source: Field Survey, 2014

Table 4.1b: Socio demographic characteristics of respondents

Religion		
Islam	38	11.6
Christianity	269	82.0
ATR	21	6.4
Total	**328**	**100.0**
Ethnicity		
Akan	211	64.3
Fante	37	11.4
Ewe	21	6.4
Others	59	17.9
Total	**328**	**100.0**
Gravidity		
Primigravidae	111	33.8
Secundigravidae	86	26.3
Multigravidae	131	39.9
Total	**328**	**100.0**
Occupation (women)		
Unemployed	48	14.6
Trader	141	42.9
Farmers	65	19.8
Artisan	18	5.5
Civil/ Public service	56	17.1
Total	**328**	**100.0**

Source: Field Survey, 2014`

4.1.2 Spousal information

An assessment of the spousal information of the respondents was made by this study. The results of the study showed that most of the respondents' spouses who represented 40.9% (123) were farmers whilst 21.6% (65) were traders. The proportion of their husbands who were civil servants was 16.9% (51) whilst 4.0% (12) were unemployed as shown in table 4.2

With respect to the educational level of the spouses, 37.9% (114) were educated to the basic level whilst 15.3% (46) were educated to the secondary level. About 18.9% (57) of the spouses had tertiary education as shown in table 4.2 below.

Table 4.2 Spousal information

Variable	Frequency (n)	Percentage (%)
Occupation		
Unemployed	12	4.0
Farming	123	40.9
Civil service	51	16.9
Trading	65	21.6
Artisans	50	16.6
Not applicable	27	8.2
Total	**328**	**100.0**
Education level		
No formal education	84	27.9
Basic	114	37.9
Secondary	46	15.3
Tertiary	57	18.9
Not applicable	27	8.2
Total	**328**	**100.0**

Source: Field Survey, 2014

4.3 Use of Antenatal care services

During pregnancy, pregnant women are required to seek antenatal care for at least four times before delivery. An assessment of the use of maternal antenatal care services showed that majority of the respondents who formed 60.4% (198) initiated ANC in the first trimester of pregnancy. It is recommended by the WHO (2000) that pregnant women

should start ANC in the first trimester of pregnancy. About 34.8% (114) initiated ANC in the second trimester of their pregnancies whilst 4.8% (16) initiated ANC in the third trimester as shown in table 4.3 below.

Pregnant women are required by the WHO to make at least four ANC visits before delivery. This study found that majority of the respondents representing 70.1% (230) were able to make at least 4 ANC visits before delivery whilst 29.9% (98) could not make the 4 ANC visits. All the respondents made an ANC visit during their pregnancies. On the adequacy of the ANC visits, respondents who made at least 4 ANC visits were regarded to have made adequate ANC visit. The proportion of respondents who made adequate ANC visits was 70.1% (230) as shown in table 4.3 below.

Table 4.3 Use of antenatal care services by respondents

Factor	Frequency (n)	Percent (%)
Timing of first ANC visit		
First Trimester	198	60.4
Second Trimester	114	34.8
Third Trimester	16	4.8
Total	**328**	**100.0**
Frequency of ANC Visits		
None	0	0.0
1-3 times	98	29.9
At least 4 times	230	70.1
Total	**328**	**100.0**
Adequacy of ANC attendance		
Yes	230	70.1
No	98	29.9
Total	**328**	**100.0**

Source: Field Survey, 2014

4.4 Reasons given by Respondents for Seeking Antenatal Care

The respondents gave different reasons for seeking ANC during their pregnancies. The results showed that most of the respondents knew the benefits of ANC. About 11.9% (39) of the respondents attended ANC to protect the health of the unborn child whilst 12.8 % (42) said that they sought ANC to protect their own health. The respondents asserted that they receive proper medication when they go for ANC. The results showed that 33.5% (110) said that they sought ANC because they wanted to get proper medication to improve their health and the health of the unborn child. About 30.5% (100) of the respondents said that they sought ANC so that potential problems associated with the pregnancy could be identified early and be treated as shown in table 4.4 below. Some of the respondents could not initiate ANC in the first trimester. The study found that 81.5% (106) did not seek ANC in the first trimester because they felt that they were not sick so there was no need seeking ANC. About 15.4% (20) of the respondents could not initiate ANC in the first trimester because of financial constraints. Cultural factors were not cited as reasons for late initiation of ANC as shown in table 4.4 below.

Table 4.4 Reasons for ANC attendance

Reason	Frequency (n)	Percent (%)
Reasons given for attending ANC		
Protect the health of the mother	42	12.8
Protect the health of the child	39	11.9
Prevent/ identify potential problems during pregnancy	100	30.5
To receive proper medication	110	33.5
For safe delivery	37	11.3
Total	**328**	**100.0**
Reasons for late ANC reporting		
Financial constraints	20	15.4
Cultural factors	0	0
Decision of husband	4	3.1
I was not sick	106	81.5
Total	**130**	**100.0**

Source: Field Survey, 2014

4.5 Relationship between ANC attendance and Socio demographic Characteristics

Use of ANC services is influenced by several factors. In this study, bivariate analyses were done to ascertain the relationship/association between the use of ANC services and individual socio demographic factors such as age, gravidity (number of times a woman has been pregnant), wealth index/SES and the educational level.

The results showed that age of respondents was significantly associated with the attendance of ANC. From the results, as the age of respondents increased the less ANC visits they make. Younger respondents made more ANC visits than the older ones

($P<0.002, \chi^2 = 6.2$). Again, gravidity was found to be significantly associated with the number of ANC visits made. Multigravidae made fewer ANC visits than primigravidae and secundigravidae. As gravidity increased, the number of ANC visits made by the respondents decreased (($P<0.001$, $\chi^2 = 21.9$). The SES of respondents significantly influenced the number of ANC visits made. Respondents with higher household wealth index made more ANC visits than those with lower household wealth index ($P<0.001, \chi^2 = 17.4$). This could be attributed to the fact that respondents with higher household index could afford the cost of health care which includes transport, feeding cost and some charges from the health facilities.

Educational level of the respondents was also established to be a significant predictor of the number of ANC visits. Women with higher level of formal education made higher number of ANC visits compared to those with lower level of formal education. As the level of education increases, the number of ANC visits also increased ($P<0.001$, $\chi^2 = 35.6$). This association could be explained by the fact that as the level of education increases, the knowledge of danger signs of pregnancy increases which motivates women to use maternal healthcare services. Also, as the level of education increases, the more empowered the person becomes and is therefore able to use health care services by making her own decisions. Table 4.5 below shows the relationship between ANC attendance and socio demographic characteristics.

Table 4.5 Bivariate analyses of ANC attendance and socio demographic characteristics

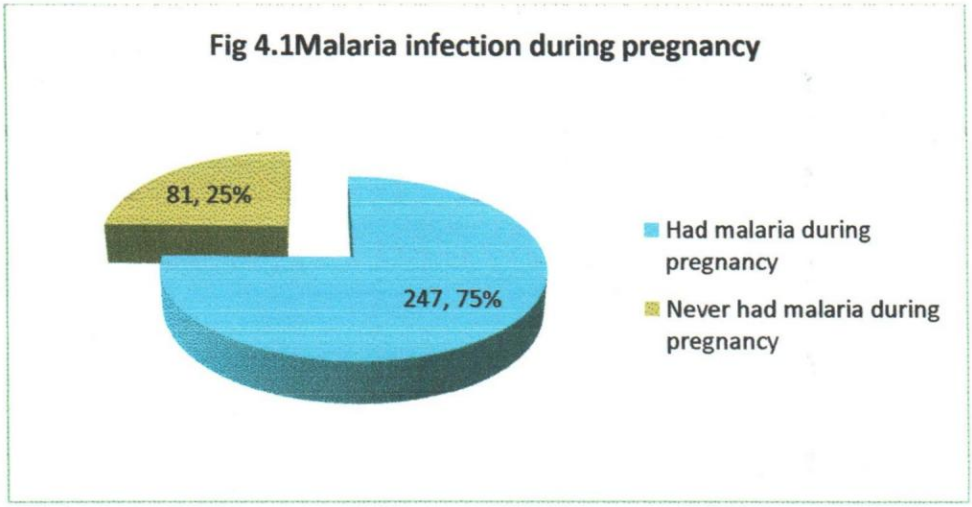
		Classification of ANC visits		
Variable	**N**	**1-3 times n (%)**	**At least 4 times n (%)**	**Test statistic**
Age (years)				
16-20	58	9 (15.5)	49(84.5)	Chi-square (χ^2) = 6.2 , p = 0.02
21-29	123	27 (21.9)	96 (78.1)	
30-39	135	46 (34.1)	89 (65.9)	
40-49	12	10 (83.3)	2 (16.7)	
Total	**328**			
Gravidity				
Primigravidae	111	13 (11.7)	98 (88.3)	Chi-square (χ^2) = 21.9 , p < 0.001
Secundigravidae	86	29 (33.7)	57 (66.3)	
Multigravidae	131	56 (42.7)	75(57.3)	
Total	**328**			
Household wealth index				
Low	194	74 (38.1)	120 (61.1)	Chi-square (χ^2) = 17.4 , p < 0.001
High	134	24 (17.9)	110 (82.1)	
Total	**328**			
Education				
Illiterate	98	62(63.3)	36 (36.7)	(χ^2 = 35.6, p < 0.001
Basic	142	49(34.5)	93(65.5)	
Secondary	47	9 (19.1)	38 (80.9)	
Tertiary	41	0 (0.0)	41(100.0)	
Total	**328**			

Source: Field Survey, 2014

4.6 Malaria Prevalence during Pregnancy

IPTp is a strategy to prevent malaria infection during pregnancy. An assessment of the prevalence of malaria among the respondents showed that majority of the women representing 75% (247) had malaria during their pregnancies whilst 25% (81) said that they did not have malaria in the entire during of their pregnancy. The results there depicts

that malaria infection is high among pregnant women in the study area. Figure 4.1 below shows the prevalence of malaria among the respondents.



Source: Field Survey, 2014

4.7 Methods used by Respondents to Prevent Malaria

The respondents used different methods to prevent malaria which is as a result of mosquito bites. The study results showed that only 25.6% (84) of the respondents always used ITNs during their pregnancies. About 36.0% (118) of the respondents said that they sometimes slept under ITNs whilst 38.4% (126) said that they never slept under ITNs when they were pregnant. However, only 6.4% (21) of the proportion who were not using ITNs said that they were using other types of bed net as shown in table 4.6 below. Again, 15.9% (52) of the respondents reported that they were using insecticide sprays and mosquito coils. The low use of ITNs was a contributing factor to the higher proportion or prevalence of malaria cases among the respondents as earlier reported in figure 4.1

Table 4.6 Methods used in malaria prevention

Method	Frequency (n)	Percent (%)
ITN use		
Always	84	25.6
Sometimes	118	36.0
Never	126	38.4
Total	**328**	**100.0**
Any other net		
Yes	21	6.4
No	105	32.0
Not applicable	202	61.6
Total	**328**	**100.0**
Insecticide sprays and mosquito coils		
Yes	52	15.9
No	276	84.1
Total	**328**	**100.0**

Source: Field Survey, 2014

4.8 Uptake of IPTp Services or SP Doses

Pregnant women are required to take three doses of SP in the entire duration of pregnancy. An assessment of the uptake of all the three doses of SP from the maternal health records books of the respondents showed that, 24.5% (77) of the respondents took only IPT1 whilst 45.7% (150) took IPT2. The proportion of respondents who took all the three IPTp or SP doses was 45.7% (101) as shown in figure 4.2 below.

gravidity increased, the likelihood of taking all the SP doses decreased ($P<0.001, \chi^2=$ 28.8). Multigravidae were found to take fewer SP doses than primigravidae and secundigravidae as shown in table 4.7 below. This was also attributed to the fewer number of ANC visits made by multigravidae because it was found that gravidity positively associated with frequency of ANC visits.

Interestingly, the uptake of IPTp was found to be inversely related with increased household wealth index. As SES increased, the uptake of all the SP doses decreased ($P<0.001, \chi^2= 18.2$) as shown in table 4.7

The trend of taking all the three SP doses was positively associated with increasing educational level. As the level of education increased, the likelihood of taking all the SP doses increased ($P<0.001, \chi^2= 52.7$). The same trend was found for frequency of ANC visits; respondents who made more ANC visits were more likely to take all the three SP doses ($P<0.001, \chi^2= 17.3$). Table 4.7 shows the relationship between socio demographic characteristics of respondents and the uptake of IPTp services.

4.10 Bivariate analyses between socio demographic characteristics and use of IPTp services

ariable	No IPT	IPTp1		IPTp2		IPTp3		Test statistics
ge (years)		Freq	%	Freq	%	Freq	%	
-20	10	6	7.5	19	12.7	36	35.6	X2=42.2 P< 0.001
-29	23	24	30	58	38.7	41	40.6	
-39	12	39	52.5	69	46	24	23.8	
-49	4	8	10	4	2.6	0	0	
ravidity								
imigravidae	9	20	14.1	47	40.8	44	62	X2= 28.8 P< 0.001
cundigravidae	20	33	23.2	37	32.2	16	22.5	
ultigravidae	27	89	62.7	31	27	11	15.5	
ousehold wealth index								
ow	24	64	44.8	52	60.5	78	78.8	X2= 18.2 P< 0.001
igh	34	79	55.2	34	39.5	21	21.2	
ducation								
iterate	11	16	28.1	28	20.7	54	39.7	X2= 52.7 P<0.001
sic	6	29	50.9	68	50.4	45	33.1	
condary	2	10	17.5	13	9.6	24	17.6	
Tertiary	0	2	3.5	26	19.3	13	9.6	
Frequency of ANC Visits								
1-3 times	16	48	56.5	46	30.3	4	4.4	X2=17.3 P< 0.001
At least 4 times	0	37	43.5	106	69.7	87	95.6	

4.11 Predictors of the Uptake of IPTp Services

The factors or predictors that influence the uptake of IPTp services among respondents were assessed by this study. Binary logistic regression was done to establish the factors that influence IPTp uptake. Variables from the bivariate analyses at the 0.01 significant levels were included in the regression model.

The analyses showed that education level of respondent was found as a factor that influences the uptake of all the three SP doses. As level of education increases, the higher the likelihood of taking all the three SP doses (P<0.002, AOR= 1.2, CI: 0.6-2.1). The same trend was also found for age of respondents, as the age of respondents increases the less likely it was for the uptake of all the three SP doses (P<0.001, AOR= 0.1, CI: 0.1-0.2). This is because the frequency of ANC visits decreased with increasing age of respondent.

Gravidity of respondents was also found to be a significant predictor of the uptake of all the three SP doses. As gravidity increased, the uptake of SP doses decreased. Respondents who had lower gravidity were more likely to take all the three doses of SP than those with higher gravidity (P<0.005, AOR= 1.6, CI: 1.4-5.8). This trend was positively related with the frequency/number of ANC visits because multigravidae made fewer ANC visits as compared to primigravidae.

Interestingly, the weight of the child at birth was found to be significantly associated with the uptake of SP doses. Women who gave birth to children with a birth weight of less than 2.5Kg were less likely to take all the SP doses as compared to those who gave birth to children with a birth weight greater than 2.5Kg (P<0.001, AOR= 0.2, CI: 0.0-6-0.9) as

shown in table 4.8 below. Again, respondents who gave birth to male children were more likely to take all the three doses of IPT as compared to those who gave birth to females as shown in table 4.8. This shows that gender of children was positively associated with the uptake of all the SP doses (P<0.002, AOR=7.3, CI: 2.5-3.8). Other factors that were fund to influence the uptake of IPTp services were; perceived seriousness of malaria in pregnancy (P<0.01, AOR= 2.4, CI: 1.4-2.1) and number of ANC visits made during pregnancy (P<0.001, AOR= 4.6, CI: 1.6- 1.8).

Table 4.8 Predictors of the uptake of IPTp uptake

Predictor	Wald	Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
Education	3.3	0.1			
Low	0.3	0.6	1.2	0.6	2.1
High	5.2	0.002	2.4	1.0	5.4
Age	64.9	<0.001	0.1	0.1	0.2
Gravidity	31.7	0.005	1.6	1.4	5.8
Weight of child	16.3	0.001			
Less than 2.5kg	11.8	0.5	0.3	0.1	0.6
Greater than 2.5kg	4.6	<0.001	0.2	0.0	0.9
Fell sick during pregnancy	7.8	0.0			
Yes	7.9	0.0	4.5	1.6	12.8
No	5.6	0.0	3.5	1.2	10.1
Sex of child	23.5	<0.001			
Male	12.3	<0.001	7.3	2.5	3.8
Female	1.2	0.3	1.7	0.7	4.5
Perceived seriousness of malaria	7.2	0.9			
Very serious/lethal	14.2	0.01	2.4	1.4	2.1
Somehow serious	6.3	0.4	1.2	2.6	3.5
Not serious	5.1	1.6	2.0	4.1	8.6
Frequency of ANC visits	28.1	0.002			
1-3 visits	2.3	0.01	2.9	1.4	1.7
4+ visits	14.7	<0.001	4.6	1.6	1.8
Constant	3.530	0.016	0.244		

Source: Field Survey, 2014

4.12 Results from Focus Group Discussions

Focus group discussions were organised among some of the women who were not interviewed with the structured questionnaires. The discussions were organised to investigate the barriers to the uptake of IPT services. The main themes that were found during the discussions are presented below with some extracts from the discussions.

4.12.1 Low knowledge of the importance of IPTp

Most of the discussants demonstrated low knowledge about the importance of taking IPTp. They only saw the drugs as mere instructions from nurses but lacked an idea about the importance of taking the drugs. One of the discussants made this statement;

.. *"Nurses only force us to take the drugs without telling us what the drug does for us. As for me the first time they gave me the drug to take in their presence I was forced to take even though I did not like the scent of the drug"...*

.."*These days we are given all kinds of drugs when you are pregnant but they don't tell you the work of those drugs. Sometimes when you take the drugs and your condition worsens because you will go home and start vomiting or may not be able to sleep"..*

4.12.2 Late initiation of ANC and Fewer number of ANC visits

The discussions revealed that some of the women who could not take all the three doses of SP were late initiation of ANC and the fewer number of ANC visits. Some of the women made the following statements;

..."*I started antenatal care late in my pregnancy. I went for my first ANC when the pregnancy was about five months. I was very healthy and could eat very so I did not go for ANC early. I was given the drug once before I delivered"...*

..."I went for ANC just twice before I delivered because I was not sick. I was given the drug just once because I did not do many ANC visits. I have given birth to 5 children and this is usual of me"...

4.12.3 Health status of women during pregnancy

The discussions revealed that the health status of respondents during their pregnancy has an influence on the uptake of IPTp services. Women who frequently fell sick during their pregnancy were made more ANC visits and took all the necessary medications. Some of the women reported that they frequently fell sick so they took all their SP doses. Some extracts from the discussions are reported below;

..."I fell sick for more than 5 months during my pregnancy so I took all the necessary drugs"....."I took all the drugs because I made more than 10 ANC visits. Because I was not well and have to go to hospital more than once a month"...

CHAPTER FIVE

DISCUSSION

5.0 Introduction

This study investigated the factors that influence the uptake of IPTp services among pregnant women. The variables that were investigated were the use of antenatal care services, the relationship between ANC services utilization and the uptake of IPTp services, factors that influence IPTp utilization and the barriers to IPTp uptake. The discussion of the results is done in accordance with the research questions and the study objectives.

5.1 Use of Antenatal Care Services

The WHO (2000) recommends that pregnant women should seek antenatal care from qualified health personnel before delivery. In this study adequate prenatal care was defined as one that was initiated in the first trimester and a minimum of four expected visits made. An assessment of the use of maternal antenatal care services showed that majority of the respondents who formed 60.4% (198) initiated ANC in the first trimester of pregnancy. It is recommended by the WHO that pregnant women should start ANC in the first trimester of pregnancy. The results are similar to that of the GDHS (2008) report which showed that more than three-quarters of women had the recommended four or more ANC visits, and 55% of women had an antenatal care visit by their fourth month of pregnancy, as recommended. However, these figures are lower than that of the MICS (2011) which found that 84.7% of pregnant women in Ghana attended the minimum number of four ANC visits.

In this study, majority of the respondents representing 70.1% (230) were able to make at least 4 ANC visits before delivery whilst 29.9% (98) could not make the 4 ANC visits. These findings are consistent with that of Abouzahr et al. (2009) in their study in Sudan who found that more than 60% of pregnant women living urban areas make at least 4 ANC visits before delivery. They attributed this to the universal nature of antenatal care because the campaign for ANC services utilization has been intensified. This also confirms the assertion of the GDHS (2008) that over 90% of women in Ghana make at least one ANC visit during pregnancy.

5.2 Relationship between ANC attendance and Socio demographic Characteristics

Several studies have been conducted to assess the influence of socio demographic factors on the use of maternal health care services. In this study, it was found that age of respondents was significantly associated with the use of antenatal care services. As the age of respondents increased the less ANC visits they make. This could be attributed to the fact that they have experienced pregnancy and delivery in some number of times so they rely on their past experience. Younger respondents made more ANC visits than the older ones. This finding is consistent with that of Stephenson et al. (2007) and Ornella et al. (2009) who found that younger women use ANC services more than older women. This implies that older women rely on their past experience of pregnancy and labour and are confident that they can endure all the obstetric complications.

Again, gravidity (number of times a woman has been pregnant) was found to be significantly associated with the number of ANC visits made. Multigravidae (has been pregnant more than once) made fewer ANC visits than primigravidae (first time pregnancy) and secundigravidae (two time pregnancy). As gravidity increased, the

number of ANC visits made by the respondents decreased. This finding agrees with that of Philomena et al. (2006) who found that women with higher gravidity make few ANC visits. This could be attributed to the fact they have experience in child bearing so they rely on their previous experience. Other factors that were found to be significantly related to use of antenatal care services are socio-economic status of respondents and the educational level of respondents.

The study found that respondents with higher household wealth index and higher educational level made more ANC visits than those with lower household wealth index. These findings are consistent with the findings of WHO (2006), Overbosch et al. (2005) and Ornella et al. (2009) who found that pregnant women in the higher socio economic class make more ANC visits. This could be attributed to the fact that respondents with higher household index could afford the cost of health care which includes transport, feeding cost and some charges from the health facilities. Again, the association could be explained by the fact that as the level of education increases, the knowledge of danger signs of pregnancy increases which motivates women to use maternal healthcare services. Also, as the level of education increases, the more empowered the person becomes and is therefore able to use health care services by making her own decisions. Religion of respondents was found not to have any significant relationship with the uptake of IPT services because it produced a p> than 0.005.

5.3 Malaria Prevalence during Pregnancy

Malaria infection in pregnancy is the reason for IPTp. IPTp is a strategy to prevent malaria infection during pregnancy. An assessment of the prevalence of malaria among the respondents showed that majority of the women representing 75% (247) had malaria

during their pregnancies whilst 25% (81) said that they did not have malaria or were not diagnosed of malaria in the entire duration of their pregnancy. The study showed that malaria infection is high among pregnant women in the study area. This was established through antenatal care records from health facilities in Sudan.

This is consistent with that of Ahorlu et al. (2012) who found that malaria infection among pregnant women in the Volta region of Ghana was 76.2%. The findings also agree with that of Adam et al. (2005) who found that malaria infection among pregnant women in Sudan was 73%.

It was again found that only 25.6% of the respondents always used ITNs during their pregnancies with 36.0% reporting that they sometimes slept under ITNs. This confirms the report by UNICEF (2008) that less than 30% of pregnant women always sleep under ITNs in the entire duration of the pregnancy. Despite the fact that ITNs are given freely to pregnant women, majority of the women do not use them always because they feel uncomfortable sleeping under the nets. About 15.9% of the respondents reported that they were using insecticide sprays and mosquito coils which is consistent with that of Mapunda et al. (2008) who found that less than 20% of pregnant women use insecticide sprays to control malaria infection.

5.4 Uptake of IPTp Services or SP Doses

Pregnant women are required to take three doses of SP in the entire duration of pregnancy. An assessment of the uptake of all the three doses of SP from the maternal health records books of the respondents showed that, 24.5% (77) of the respondents took

only IPT1 whilst 45.7% (150) took IPT2. The proportion of respondents who took all the three IPTp or SP doses was 30.8%.

According to Steketee et al. (2005), malaria in pregnancy accounts for 5 to 12% of all low-weight births. They further reported that more than 40% of pregnant women in Kenya take all the three SP doses. This finding is inconsistent with the findings of this study which found that only 30.8% took all the three SP doses. The lower uptake of IPTp in the study sample could be attributed to the lower knowledge of the importance or benefits of IPTp among the respondents.

5.5 Predictors of the Uptake of IPTp Services

The uptake of IPTp services is influenced by different factors. This study assessed the association between socio demographic characteristics such as age, gravidity, socio-economic status and educational level of respondents. The association between the frequency of ANC visits and IPTp services uptake was also assessed.

The results of the study showed that age of respondents is positively associated with the uptake of IPTp services. As the age of respondents increases, the uptake of IPTp decreases.This was due to the fact that as age increases, the frequency of ANC visits increased. Also, the gravidity of respondents was also found to be significantly associated with use of IPTp services. As gravidity increased, the likelihood of taking all the SP doses decreased. Multigravidae were found to take fewer SP doses than primigravidae and secundigravidae. This was also attributed to the fewer number of ANC visits made by multigravidae because it was found that gravidity positively associated with frequency

of ANC visits. Interestingly, the uptake of IPTp was found to be inversely related with increased household wealth index. As SES increased, the uptake of all the SP doses decreased. The trend of taking all the three SP doses was positively associated with increasing educational level. As the level of education increased, the likelihood of taking all the SP doses increased. . The same trend was found for frequency of ANC visits; respondents who made more ANC visits were more likely to take all the three SP doses. The findings of this study corroborate the findings of earlier studies conducted in several countries. For instance, in Ghana, Antwi et al. (2007) found that personal attributes such as marital status and education level influenced the IPTp uptake. In this regard, the study noted that the IPTp uptake was significantly higher among participants with university education than those reporting primary education. In Uganda, Mpungu and Mufubenga (2008) noted that lack of post primary education significantly associated with the failure of pregnant women to access $IPTp_1$. Contrastingly, in Tanzania, Marchant et al. (2008) reported lack of significant association between the uptake of $IPTp_2$ and factors such as age, marital status and education level. The study noted that women having less than primary education were about three times more likely to default in subsequent ANC visits than those reporting secondary education or higher. In Senegal, Olliaro et al. (2008) reported that the timing of IPTp is directly linked to the onset of ANC visits. They again found that delayed attendance of ANC contributes to non-completion of IPTp doses. In this regard, 45% of the participants initiated ANC attendance in the third trimester and only 23.7% received $IPTp_2$. The timing of first visits to ANC clinics also influences the IPTp uptake. In this regard, Anders et al., (2008) found that even though 48% of the participants started ANC visits before the 16^{th} week of pregnancy, up to 86% of this lot

did not receive IPTp1 because the gestation period was below the recommended 16 weeks. Those who did not receive proper explanation of this policy requirement were discouraged and failed to turn up for subsequent appointments.

Furthermore, Nankwanga et al. (2008) conducted a study and concluded that IPTpuptake is significantly associated with distance to ANC facilities, domestic chores and absence of health problems or complications during pregnancy, as well as gravidity. Hence, primigravid women are more likely to attend ANC in time for IPTp doses than multigravid women. Their study noted that first-time pregnant women sought medical assistance earlier than experienced mothers, to pacify anxiety arising due to sudden physiological changes. Previous studies by Nganda et al. (2004) also observed that theIPTp uptake is significantly associated with women's knowledge regarding IPTp. In their study, they found that only 21% of their study participants had received information about IPTp, of which only 31.5% knew the recommended drugs for IPTp and only 4.5% knew the recommended dose. The study found that over 60% of the participants did not receive health education on IPTp, resulting to low IPTp coverage.

Interestingly, the weight of the child at birth was found to be significantly associated with the uptake of SP doses. Women who gave birth to children with a birth weight of less than 2.5Kg were less likely to take all the SP doses as compared to those who gave birth to children with a birth weight greater than 2.5Kg. Again, respondents who gave birth to male children were more likely to take all the three doses of IPT as compared to those who gave birth to females. This shows that gender of children was positively associated with the uptake of all the SP doses. This was established through the analysis of the quantitative data.

5.6 Barriers to the Uptake of IPT Services

Results from the focus group discussions supported that of the quantitative results that awareness of IPT services is high among pregnant women. However, there were still some barriers to the uptake of IPT services. In probing during the FGDs the following barriers were found; health status of women during pregnancy, late initiation of ANC and Fewer number of ANC visits and low knowledge of the importance of IPTp.

A Policy Brief Report (2005) by the National Latina Institute of Reproductive Health reported that knowledge of IPT influence the uptake of the services among immigrant Latinas. This is consistent with the results of this study which found that low knowledge of the benefits of IPT was a barrier to the uptake of the service.

The health status of the pregnant women was found to be a barrier to the uptake of IPT services. Majority of the women felt that they were healthy and therefore it was not necessary for them to take the IPT. This supports the assertion by Ornella et al. (2006) that many African countries are struggling to increase the uptake rate of IPT among pregnant women due to the fact that majority of pregnant women think that IPT is for those who are not healthy during their pregnancy period.

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CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

The summary of findings of the study and the conclusion and recommendations are presented in this chapter. The summary of findings presented in this chapter is based on the objectives of the study.

6.1 Conclusions

The uptake of IPT services is one of the measures taken to prevent malaria among pregnant women and the foetus.The aim of this study was to investigate the factors that influence the uptake of IPT services among pregnant women in the Bekwai Municipality. The variables that were assessed are; the current uptake of IPT service among pregnant women, the relationship between women's economic and educational level and the uptake of IPT services, the relationship between ANC attendance and the uptake of IPT services and factors that influence the uptake of IPTp services.

The study found that 75% (247) of the respondents had malaria during their pregnancies.

The study again found that 24.5% (77) of the respondents took only IPT1 whilst 45.7% (150) took IPT2.

The proportion of respondents who took all the three IPTp or SP doses was 30.8% (101).

In bivariate analysis, the predictors of IPTp uptake were age ($P<0.001$, $\chi^2= 42.2$), gravidity ($P<0.001$, $\chi^2= 28.8$), SES ($P<0.001$, $\chi^2= 18.2$), educational status ($P<0.001$, $\chi^2= 52.7$) and number of ANC visits ($P<0.001$, $\chi^2= 17.3$).

In multivariate analyses, the factors that were found to be significantly associated with IPTp uptake are; level of education (P<0.002, AOR= 1.2, CI: 0.6-2.1), age (P<0.001, AOR= 0.1, CI: 0.1-0.2), gravidity (P<0.005, AOR= 1.6, CI: 1.4-5.8), weight of child (P<0.001, AOR= 0.2, CI: 0.0-6-0.9), sex of child (P<0.002, AOR=7.3, CI: 2.5-3.8), perceived seriousness of malaria in pregnancy (P<0.01, AOR= 2.4, CI: 1.4-2.1) and the number of ANC visits (P<0.001, AOR= 4.6, CI: 1.6- 1.8).

The uptake of IPT was also influenced by the knowledge of respondents on the importance of IPT, the health status of pregnant women and late initiation of ANC

The barriers to the uptake of IPT services are health status of women during pregnancy, late initiation of ANC and less number of ANC visits and low knowledge of the importance of IPTp.

6.2 Recommendations

Based on the findings of the study, the following recommendations are made for stakeholders of healthcare in the Municipality;

1. Health promotion activities on antenatal care should be intensified in the Municipality by the Municipal Health Directorate because respondents who made more ANC visits took all the SP doses.
2. Nurses at the RCH centres should explain the importance of SP to pregnant women. They should not just supervise the taking of the drugs but should explain the importance of the drugs.
3. Pregnant women should be encouraged by nurses and all stakeholders to use ITNs because most of them were not using ITNs.

6.3 Suggestion for Further Research

The study found that perceived seriousness of malaria in pregnancy was a significant predictor of the uptake of IPT services. However, this study could not establish the knowledge of pregnant women on health complications associated with pregnancy. It is therefore suggested that a study should be conducted to assess maternal knowledge on risk factors of health during pregnancy.

6.5 Limitation of the Study

The wealth index of respondents was assessed using the type of housing and the possession of household gadgets. This could be flawed because income level may not necessarily be determined by the number of household gadgets. Some may have the ability to buy the gadgets but may not buy them.

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APPENDIX- STUDY QUESTIONNAIRE

AN INVESTIGATION OF FACTORS INFLUENCING THE UPTAKE OF INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY PROGRAMME IN THE BEKWAI MUNICIPALITY OF GHANA

QUESTIONAIRE FOR POST PARTUM WOMEN

INFORMED CONSENT

Hello, my name is **ADDAI-DONKOR VENSON.** I am a student of the University for Development Studies offering a Masters Degree Program in Community Health and Development. I am conducting a study on the above topic

". I would very much appreciate your participation in this study. This information will help the District Health Directorate, private agencies, the community and other decision making bodies to know the exact factors that influence the uptake of IPT services among pregnant women.

The interview will take between 10 and 20 minutes to complete. Whatever information you provide will be treated in confidence. Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important. At this time, do you want to ask me anything about the survey?

May I begin the interview now? YES…….. NO……

IDENTIFICATION

District……..

Sub-District……..

Name of community……

Interview Date……..... Interview #.....

House Number/Name ……..

Name of Interviewer…….....

Facility Name……

Language of interview……

Translator used (A| Yes B| No)

SECTION A : SOCIO – DEMOGRAPHIC CHARACTERISTICS OF MOTHER

1) How old are you?..... (years)
2) What tribe are you A) Akan B) Ewe C) Fante D) Dagomba E) Dargarti F) Others
3) What is your religion A) Islam B Christianity C) ATR D) Others
4) What is your marital status? A. [Single] B. [married] C. [widowed] D. [Divorce]
5) What is your level ofeducation? A.[illiterate] B. [Primary] C. [Basic] D.[Secondary] E.[Tertiary]

6 .Occupation of mother?

A. Unemployed
B. Petty Trader
C. Farmer
D. Civil/Public Servant

E. Others (specify) .....

9. What is your husband's educational level? A. illiterate B. Primary C. Basic D Secondary E[Tertiary

10. Occupation of husband?

A. Unemployed
B. Petty Trader
C. Farmer
D. Civil/Public Servant
E. Others (specify) .....

SECTION B: ANTENATAL CARE DURING PREGNANCY

11) Did you plan for your present pregnancy? A. [Yes] B. [No]

12) How many months was your pregnancy when you first received antenatal services?.....

13. How many times did you receive antenatal care during the last pregnancy?...

14. If the first ANC visit was initiated after the first trimester (12 weeks), what was the main reason for seeking ANC services late?

.....

.....

15. Who makes the decision for you to seek prenatal care?

A. Husband
B. Mother in-law
C. Friends
D. Self

17. Registered with National Health Insurance? A. [Yes] B. [No]

18. Number of pregnancies.....

19. Number of live births.....

20. What information/assistance is given during ante-natal (Tick all that apply)

A. Childhood diseases
B. Nutrition of mothers and children
C. Breastfeeding
D. Antenatal and delivery care
E. Vaccinations
F. Birth control and contraceptives
G. Not Applicable (Has not attended ANC)

21. How will you rate the quality/adequacy of ANC services received?

A. Poor
B. Fair
C. Good
D. Excellent
E. Not Applicable

22. What is your level of satisfaction with ANC services?

A. Dissatisfied
B. Satisfied
C. Very satisfied
D. Indifferent
E. Can't say
F. Irrelevant

23. Number of tetanus toxoid (TT) injections received during the last pregnancy (Interviewer should check from the maternal health records booklet)

24. What birth preparedness and complication readiness (BPACR) practices did you follow while pregnant with the index child?

A. identified a trained birth attendant for delivery
B. identified a health facility for emergency

C. arranged for transport for delivery and/or obstetric emergency
D. saved money
E. Others (specify).....

25. How much do the facilities charge you when you deliver?
A. No fee paid
B. Less than 5 GH
C. 5GH – 10 GH
D. 11 GH – 19 GH
E. 20 GH and above
F. Not Applicable

26. Did you receive care from the same health care provider throughout the pregnancy?

YES NO

27. Which of the following services did you received from ANC (Circle all that apply)

A. weight checked at least two times
B. height taken on first visit
C. blood pressure taken at least three times
D. urine examination performed at least once
E. blood sample examination performed at least once
F. received health and nutrition talk at least four times on possible danger signs/complications of pregnancy
G. received tetanus toxoid injection at least once
H. received iron supplementation monthly
I. Measurement of fundal height against the age of gestation, fetal heart beat and fetal movement count monthly
J. Received Malaria prophylaxis at least two doses

28. Where did you deliver your child? A. Home B. Hospital C. Health Centre

29. Who assisted you during delivery? A. Doctor B. Midwife C. TBA D. Mother in-law E. Self-delivery. F. Other relatives

30. If home delivery was not planned, what was your reason?

A. Spontaneous labour B. Late night labour C. Problems with previous home delivery
D. Others (specify).....

30. Did you sleep under a mosquito net during your pregnancy A. Yes B. No

31. If yes, was it a treated net? A. Yes B. No

32. Where did you get the net? A. health facility B. Pharmacy shops C. Gift from a friend/relative D. Others

SECTION C: SOCIO-ECONOMIC HOUSEHOLD WEALTH INDEX OF RESPONDENT

INTRUCTION: These questions should be asked in the house of the respondent

1. What type of house do members of the household dwell in?

A. Block house
B. Brick house
C. Mud house
D. Others (specify).....

2. Does the household own a house?

A. Yes
B. No

3. How many rooms does the household have at their disposal? .....

4. What kind of toilet facility do members of the household usually use?

A. Own flush toilet
B. Public or shared flush toilet
C. own pit toilet
D. public or shared pit toilet
E. No facility

5. What is the source of lighting for the household?

A. Electricity
B. Gas
C. Kerosene
D. Others (specify) .....

6. What type of fuel does your household mainly use for cooking?

A. Electricity

B. LPG
C. Charcoal
D. Kerosene
E. Firewood
F. Others (Specify)……..

7. What is the main source of drinking water for members of the household?

A. Pipe water
B. Borehole
C. dug well
D. Bottle /Sachet water
E. Others (specify)……

8. Does your household have any of these assets? (Tick Yes or No)

ITEMS	YES	NO
Radio		
Clock or watch		
Colour TV		
Black and white TV		
Sewing Machine		
Mattress		
Cot or Bed		
Table		
Chair		
Refrigerator		
Computer		
DVD/VCD player		
Electric Fan		
Telephone/mobile		

Bicycle Motorcycle Animal-drawn cart Car/truck Ownership of livestock		

Uptake of IPT Services

1. When you were pregnant did you fall sick? A. Yes B. No
2. If yes in Q 1 above, what type of sickness? A. Diarrhoea B. Malaria C. General body weakness D. Others
3. Were you admitted at the hospital? A. Yes B. No
4. Did you sleep under ITN when you were pregnant? A. Always B. Sometimes C. Never
5. Which of the following did you use? A. Mosquito coils B. Insecticide spray
6. Did you use any other bed net? A. Yes B. No
7. Do you think malaria is a serious disease in pregnancy? A. Very serious B. Somehow serious C. Not serious
8. During your pregnancy were you given doses of SP at ANC? A. Yes B.NO
9. How many doses of SP did you receive?.....
10. Do you know the reason for taking SP? A. Yes B. No
11. If yes , what are the reasons? A. to prevent malaria B. To increase your appetite C. To increase the birth weight of the child D. To facilitate easy delivery
12. Did you ask the nurses about the importance of taking SP during pregnancy? A. Yes B. No

13. How is IPT delivered? A. IPT is offered at the health facility B. A pregnant woman is given the drug to take it home C. A pregnant woman is given a prescription to buy the drug from a pharmacy shop
14. Did nurses explain the importance of SP to you? A. Yes B. No
15. What are the barriers to the uptake of IPT among pregnant women? (*Multiple answers are allowed)*

    A. Inadequate knowledge on the importance of IPT
    B. Cost of seeking healthcare
    C. Waiting time
    D. Provider attitudes
    E. Availability of SP on-site
    F. Knowledge and beliefs of cause and symptoms of malaria
    G. Knowledge and beliefs of risks of MiP
    H. Husband's/community's support for accessing MiP care
    I. Correct knowledge of number of doses (2/3)
    J. Know a dose should be given in 2nd trimester
    K. Know a dose should be given in 3rd trimester
    L. Knowledge of existence of policy on IPTp
    M. Knowledge of recommended approach of giving IPTp (DOT)

16. Sex of child A. Male B. Female
17. Birth weight of child……Kg