UNIVERSITY OF GHANA
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BARRIERS TO UTILIZATION OF INTERMITTENT PREVENTIVE TREATMENT WITH SULFADOXINE PYRIMETHAMINE IN PREGNANCY AT PRIVATE FACILITIES IN TEMA METROPOLIS.

BY

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DECLARATION

I, SELINA AMANKWAH, hereby declare that except for references made to other people's work which have been duly acknowledged, this thesis is the result of my own original research undertaken under supervision and that it has neither in whole nor in part been presented for another degree elsewhere.

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DEDICATION

This research is dedicated to God Almighty for my life, his protection and strength. To my husband, Mr. Maxwell Mishio, children (Jaden and Jason) and finally to my mummy for their encouragement and immeasurable support.

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I give glory to God for the grace, strength and inspiration to undertake this study. I would also like to thank the WHO tropical diseases research for sponsoring this work financially. My sincerest appreciation also goes to Dr. Francis Anto, my academic supervisor and all the staff of the department of epidemiology and disease control of the school of public health, UG, Legon for their invaluable guidance, supervision and immense support during the study. I would also like to thank Dr. Priscilla Nortey of School of Public health, for her continuous advice and encouragement throughout the period of this program.

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ABSTRACT

Background: The National Malaria Control Program of Ghana recommends the use of intermittent preventive treatment of malaria in pregnancy using sulfadoxine pyrimethamine (SP) to prevent malaria and associated complications. There is overwhelming evidence, however that uptake of this intervention in the country is low. This low uptake is more prominent in private health facilities.

Objective: This study examined factors associated with low uptake of three or more doses of SP among pregnant women who received antenatal care (ANC) services at selected private hospitals in the Tema metropolis.

Methods: A cross-sectional descriptive study was carried out among ANC attendants and midwives using the mixed method approach. ANC attendants were consecutively recruited into the study at the selected private hospitals as they came for ANC. Respondents demographic characteristics, knowledge on intermittent preventive treatment (IPTp)-SP, implementation of directly observed therapy(DOT), experience of drug side effects, timing of first ANC visits and total number of ANC visits made during the period of pregnancy were assessed. Supply of logistics, documentation of SP, reporting of SP uptake, and monitoring and evaluation of IPTp-SP were also assessed. In-depth interviews involving midwives in charge of the facilities were also conducted. Audio recordings of the interview were transcribed and manually analyzed. Chi-square test was done to assess socio-demographic differences in SP uptake.

Both bivariate and multiple logistic regression were used to generate crude odds ratio and adjusted odds ratios. Odds ratios were estimated to assess the strength of the associations

using a 95% confidence intervals for significance testing. The level of significance was set at $P<0.05$.

Results: Out of the 384 respondents, 179(46.6%) had taken 3 or more doses by their last month of pregnancy. Out of the 177 respondent who reported to ANC in their first trimester, 98/177 (54.8%) had taken at least 3 doses of SP, whilst 77/183(43.3%) of the respondents who reported in the second trimester had taken at least 3 doses. Twenty four reported in their third trimester with only 4/24 (2.2%) of them taking at least 3 doses. Majority of the respondents (234/384) had information given to them by midwives prior to administration. Out of this, 71.2% took three or more doses. Also, 50/192 (72.1%) of respondents who attended ANC more than five times had received at least three doses. Qualitative analysis showed poor adherence to DOT, low knowledge of midwives on IPTp-SP and active support of program implementers on IPTp-SP as an intervention.

CONCLUSION: The proportion of uptake of at least three doses of SP is low and not encouraging since the NMCP has a target of 55% for uptake of 3 or more doses. Increased number of ANC visits, timing of first ANC visit and prior information given on SP by midwives had a significant relationship with uptake of SP. Knowledge of midwives on IPTp-SP was low, midwives could not mention WHO guidelines on SP administration. Support from program implementers was adequate but monitoring and evaluation was not frequently done on SP. Private ANC workers did not adhere to DOT in SP administration.

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LIST OF ABBREVIATIONS

ANC-Antenatal clinic

GDHS – Ghana Demographic Health Survey

GHS-Ghana Health Service

GSS – Ghana Statistical Service

IPTp- Intermittent preventive treatment in pregnancy

ITN-Insecticide treated nets

IUGR-Intra uterine growth retardation

LBW – Low Birth Weight

LLINS-Long Lasting Insecticide Nets

NMCP-National Malaria Control Program

PNC-Post Natal Clinic

RBM-Roll Back Malaria

SES – Socio Economic Status

SP-Sulfadoxine Pyrimethamine

TDR- Tropical diseases research

WHO – World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 GLOBAL MALARIA BURDEN

Malaria is a protozoan infection caused by four species of parasites namely *Plasmodium falciparum*, *Plasmodium vivax*, *Plasmodium malariae* and *plasmodium ovale that* spread from one person to another via the bite of the female anopheles mosquito. Out of these species, *P. falciparum* and P.*vivax* pose the greatest public health challenge.

Malaria has been a global burden over centuries due to the high mortality and morbidity associated with its infection (WHO, 2012). In 2015, there were 214 million estimated cases of malaria and 438,000 estimated deaths from malaria infection globally. Eighty eight percent of these cases are estimated to have occurred in the African region, followed by 10% in the south-east Asia region and finally 2% in the eastern Mediterranean region. Similarly,90% of the total malaria deaths came from the African region,7% from the South-East Asia region and 2% from the eastern Mediterranean region, (WHO, 2015). Since 2000, malaria in sub-Saharan Africa is estimated to have cost, on average each year, nearly US$ 300 million for case management alone (WHO, 2015).

1.2 MALARIA BURDEN IN GHANA

Malaria is an endemic disease in Ghana, though transmission rates in the urban parts of the country is low. The country recorded about 10.1 million cases of OPD malaria cases in 2015, representing about 20.2% increase from 2014 and negatively affecting productivity (GHS, 2015). Malaria remains one of the leading causes of death in the country and is associated with majority of workplace absenteeism. Reports from the

2015 NMCP showed that there were 328,119 cases of malaria in pregnancy, of which 0.8% accounted for maternal death, which is highly unacceptable. Undeniably, the economic burden, morbidity and mortalities associated with malaria cannot be underestimated in a malaria endemic country like Ghana, hence the need to intensify preventive and control strategies. The current National Malaria Control Strategic Plan emphasizes a significant scale up of activities to achieve and sustain universal access. The plan also addresses new methods of addressing malaria including treating uncomplicated malaria with artemisin-based therapy, malaria prevention in pregnancy through the use of sulfadoxine pyrimethamine and increased emphasis on indoor residual spraying.

1.3 MALARIA IN PREGNANCY

Malaria infection in pregnancy poses substantial risk to the pregnant woman, her fetus and the new born baby, hence can be said to be a significant public health problem. The most predominant parasite associated with low birth weight and maternal illness in Africa is the *P.falciparum*. The symptoms and complication of malaria in pregnancy depend on the level of acquired immunity and the transmission intensity in the given geographical area. In high-transmission settings with high levels of acquired immunity, *P. falciparum* infection is usually asymptomatic in pregnancy. However, parasites may be present in the placenta and contribute to maternal anemia even in the absence of documented peripheral parasitemia. Both maternal anemia and placental parasitemia can lead to low birth weight, which is an important contributor to infant mortality (WHO, 2012). In high transmission settings, malaria infection is more pronounced in women in their first pregnancy. On the other hand, in low-transmission settings, where women of reproductive age have relatively less acquired immunity to

malaria, malaria in pregnancy is associated with anemia, an increased risk of severe malaria, and it may lead to spontaneous abortion, stillbirth, prematurity and low birth weight (WHO,2012). In such settings, malaria affects all pregnant women, regardless of the number of times they have been pregnant.

1.4 MALARIA PREVENTION AND CONTROL

Malaria control has been a central element of the millennium development goal and has received heightened attention since the launch of the Roll Back Malaria (RBM) program in 1998. Several strategies and programs have been emphasized since the year 2000 to curb the devastating effect of malaria on the global population by the world health organization (WHO). These strategies include vector control, chemoprevention and case management. Vector control reduces transmission of parasites from humans to mosquitoes and then back to humans and is achieved largely through use of insecticide-treated mosquito nets (ITNs) or indoor residual spraying (IRS). Chemoprevention suppresses blood-stage infection in humans and case management includes prompt diagnosis and treatment of infections. In fact, the tremendous reduction in malaria cases and death from the year 2000 to 2015 by 37% and 50% respectively can be highly attributed to the continuous running of these preventive programs especially in malaria endemic areas (WHO, 2015). The WHO recommends use of long-lasting insecticidal nets (LLINs) in all areas with moderate to high malaria transmission in Africa, intermittent preventive treatment in pregnancy (IPTp) with sulfadoxine-pyrimethamine (SP), and prompt diagnosis and effective treatment of malaria infections as means of preventing and controlling malaria in pregnancy.

1.5 INTERMITENT PREVENTIVE TREATMENT (IPTp) WITH SULFADOXINE PYRIMETHAMINE (SP)

IPTp with SP is an effective strategy recommended by WHO in preventing the adverse consequences of malaria on maternal and fetal outcomes, especially in areas of moderate to high transmission in Africa. As of October 2012, WHO recommends that at least three doses of this preventive treatment be given to all pregnant women at each scheduled antenatal care visit starting as early as possible in the second trimester and given at one-month interval. In order to capture pregnant women for timely administration of SP, the WHO recommends a schedule of four antenatal care visits by all pregnant women. The WHO also recommends that:

1. First IPTp-SP dose should be administered as early as possible during the 2nd trimester of gestation.
2. Each SP dose should be given at least one month apart
3. The last dose of IPTp with SP can be administered up to the time of delivery, without safety concerns.
4. IPTp-SP be administered as a directly observed therapy (DOT).
5. IPTp-SP should not be given with folic acid as it reduces it efficacy as an antimalarial.
6. IPTp-SP should not be given to women on co- trimoxazole prophylaxis,
7. IPTp-SP can be given on an empty or full stomach.

In countries where IPTp with SP is currently being implemented, transmission of malaria has been reduced substantially (WHO, 2012).

1.6 IPTp WITH SP IN GHANA

Ghana adopted the IPTp-SP in 2003. Before the introduction of this policy, pregnant women were given weekly prophylaxis of chloroquine\ to prevent malaria infection in pregnancy. Currently, the antimalarial treatment policy prescribes IPTp with SP for malaria prevention in pregnancy. The IPTp-SP administration in Ghana follows the standard WHO protocol. There is also an addition of IPTp4 and IPTp5 which commenced in 2014 based on recommendations from WHO experts Committee review reports in 2012 (GHS Annual report, 2015).

The overall percentage of IPTp -SP utilization is 41.3% out of the 944649 registered ANC cases nationwide, using IPTp3 as the minimum dosage required by the national malaria control program (NMCP, 2015).

1.7 PROBLEM STATEMENT

Ideally, every pregnant woman must receive a minimum of three doses of sulfadoxine pyrimethamine (SP) as a preventive chemo therapy against malaria infection and disease. However, there has been poor uptake in most sub-Saharan African countries, with missed cases at antenatal care being the main cause of the low IPTp uptake in the African sub region (WHO, 2015).

Ghana's goal of achieving 55% uptake of at least three doses of SP by pregnant women in 2015 was not realized (GHS report, 2015).Out of a total of 944,649 pregnant women registered during 2015, 69% received IPTp1, 58% received IPTp2 and 41.3% received IPTp3. Also, 15.7% took IPTp4 and 5.8% received IPT5 (GHS report, 2015). According to this report, the difference in IPTp uptake was due to shortages of stocks of SP in a majority of the regions and delays in procurement

processes. Other factors include, late reporting at ANC by pregnant women, allergic reactions to SP and lack of funds to attend ANC (Asiedua, 2011).

According to the National Malaria Control Program (NMCP) of Ghana, most private facilities report low uptake of SP in the Tema metropolis. Out of the 68,629 pregnant women who sought antenatal services at private facilities in the Tema district in 2015, only 11.1% received 3 doses of SP, 5.5% received IPTp4 and 2.2% received IPTp5.

To achieve the maximum protection of SP in pregnancy against malaria, at least three doses of SP must be taken at monthly intervals. This study therefore seeks to identify the factors contributing to the low uptake of IPTp with SP among pregnant women who patronize private facilities.

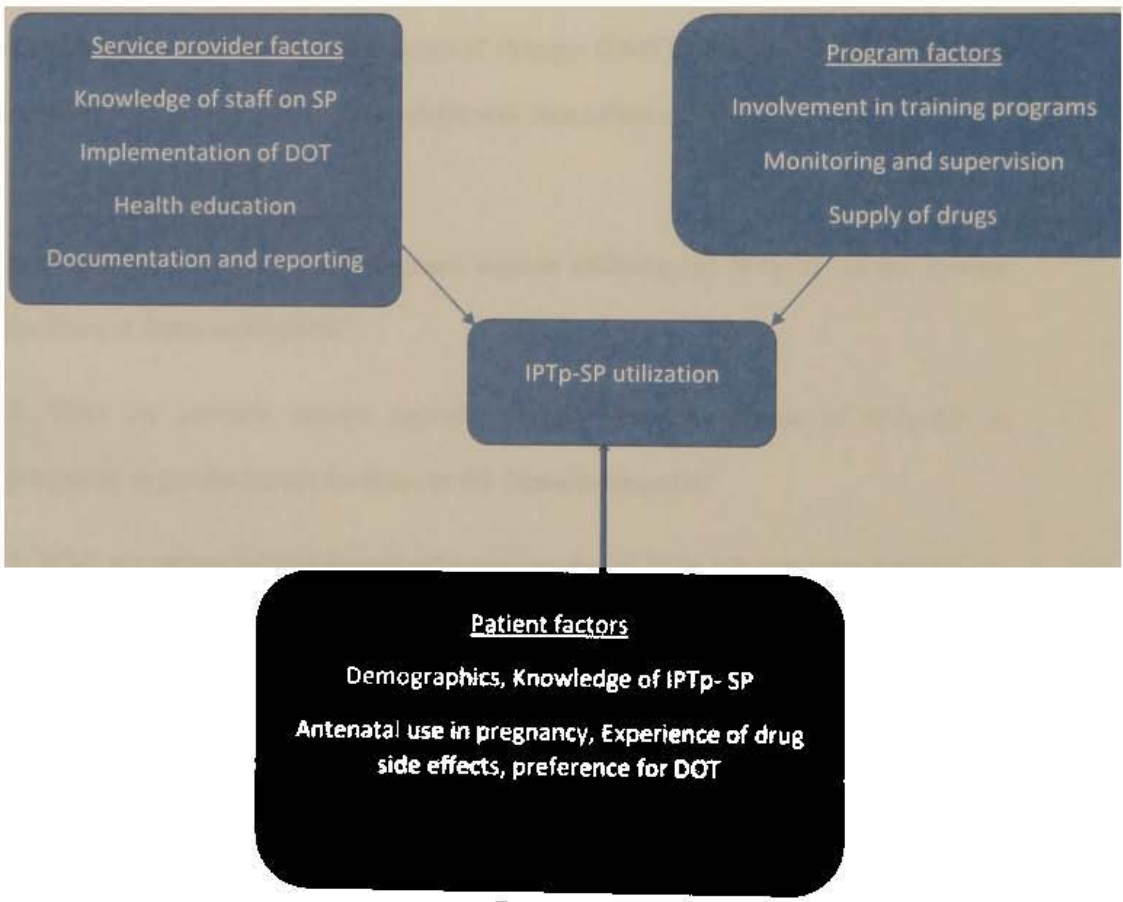
1.8 JUSTIFICATION OF THE STUDY

This study is highly significant because several studies have been done in the country regarding IPTp utilization but only few have investigated the challenges of private sectors in the utilization of this strategy. Owing to the proven success in the reduction of malaria cases in pregnancy since the implementation of the intermittent preventive treatment, it is extremely important that all factors presenting as barriers to the high utilization of this strategy are explored holistically to ensure high coverage and maximum benefits to pregnant women. The national malaria control program identifies low utilization among private hospitals as one massive challenge in the implementation of this strategy, hence the need to conduct this study among private facilities to unravel some of the factors accounting for poor utilization.

High utilization of SP by pregnant women in all facilities is beneficial to both mother and unborn baby and the nation as a whole. Reduction in neonatal death, maternal anemia and low birth weight, to mention but a few are some of the benefits to mother and unborn child.

The study will also inform program implementers and policy makers on appropriate measures to enhance and modify various aspects of the program to achieve high utilization and increase national coverage. Nationally, the economic burden of malaria in pregnancy will be reduced drastically since national funds can be re directed to other areas of development to achieve a stable economy.

FIGURE 1: THE CONCEPTUAL FRAMEWORK OF FACTORS AFFECTING IPTp UTILIZATION



The basic conceptual framework above seeks to explain how patient factors, service provider factors and program factors affect the utilization of intermittent preventive treatment among pregnant women who attend private hospitals. Patient factors such as demographics, knowledge on IPTp, experience with side effects of SP, and antenatal use affect uptake of IPTp at the ANC.

Service provider factors such as education of patient on IPTp will build patient knowledge which will eventually affect uptake of IPTp. The knowledge of the ANC staff on IPTp such as knowledge on WHO guidelines and side effects of drug affects patient knowledge on IPTp and subsequently on utilization. Program implementer factors such as continuous training of ANC staff on IPTp and timely supply of logistics directly influence the utilization of IPTp by these private sectors. The implementation of the directly observed therapy (DOT) protocol by the ANC staff affect patient compliance to IPTp which will then affect utilization.

1.9 Research questions

1. What is the proportion of pregnant women utilizing the IPTp-SP in the private facilities at Tema metropolis?

2. What are possible service provider factors affecting uptake of IPTp-SP in pregnancy at private health facilities in the Tema metropolis?

3. What are patient related factors affecting uptake of IPTp-SP at private facilities in Tema?

4. What program factors affect uptake of IPTp-SP in pregnancy at Tema metropolis?

1.9.1 GENERAL OBJECTIVE

To identify factors influencing utilization of intermittent preventive treatment with Sulfadoxine Pyrimethamine by pregnant women attending private facilities in the Tema metropolis.

1.9.2 Specific objectives

1. To determine the proportion of pregnant women who took at least three doses of IPTp-SP in private hospitals in Tema metropolis.

2. To determine possible service provider factors hindering the uptake of IPTp-SP by pregnant women attending private facilities.

3. To assess patient related factors influencing uptake of IPT-SP by pregnant women at private hospitals.

4. To assess program factors affecting the uptake of IPTp-SP by pregnant women in private facilities.

CHAPTER TWO

LITERATURE REVIEW

2.1 MALARIA IN PREGNANCY AND ITS EFFECTS

Remarkable progress has been made in the fight against malaria, however 3.4 billion people including pregnant women are at risk of malaria. Approximately 50 million women living in malaria endemic areas become pregnant every year with half of them coming from sub-Saharan Africa, especially in areas of intense *Plasmodium falciparum* transmission (WHO,2015). In these regions, malaria is mostly asymptomatic during pregnancy, however, it has severe adverse effects on both mother and child, especially among primigravidae in endemic areas who have developed immunity against the disease. In high-transmission areas, primigravidae are indisputably at greater risk of infection, whereas the gravidity effect is less marked in low-transmission areas. The advent of HIV, which increases susceptibility to malaria in pregnancy and reduces the efficacy of antimalarial interventions has also been documented to complicate the use of antimalarial because of potential drug interactions,(Menéndez, D'Alessandro, & O ter Kuile, 2007). Studies demonstrate that HIV contributes to approximately 25% of maternal malaria infections and contributes importantly to maternal anemia (Menendez et al., 2007).

For instance, Orish et al. (2013), conducted a study to assess the burden of maternal malaria and HIV among pregnant women in Ghana and to determine the risk of anemia among pregnant women with dual infection using a cross sectional study. Results from this study indicated that pregnant women infected with both malaria and HIV are twice as likely to be anemic than women with a single infection or none, strongly buttressing the prominent effect of HIV infection on malaria in pregnancy.

According to Hommerich et al. (2007), *P. falciparum* is the most dangerous species associated with malaria infection during pregnancy. Its infection is highly detrimental in pregnancy, frequently resulting in maternal anemia, still birth, intra uterine growth retardation, preterm delivery and infant death.

Mubyazi et al., (2005) conducted a study on the burden of malaria in pregnancy using a secondary data in endemic malaria countries and reported that *P. falciparum* malaria in pregnancy appeared to contribute to anemia and LBW through both preterm-LBW and IUGR-LBW in a relatively consistent fashion across different studies and settings. The prevalence of malaria infection in pregnancy ranged from approximately 10% to 65% across the settings where these associations were observed. The prevalence of the conditions of severe anemia, LBW and IUGR were modest and consistent across studies, accounting for approximately 8–14% of IUGR and approximately 8–36% of preterm LBW.

2.2 IPTp WITH SP AS A PREVENTIVE MEASURE FOR MALARIA IN PREGNANCY

For maternal prevention of malaria and its consequences, the WHO recommends use of IPTp-SP. In 2012, The Evidence Review Group of the WHO proposed the Interim Policy Statement on intermittent preventive treatment in pregnancy (IPTp) with sulfadoxine pyrimethamine (SP) stating emphatically that IPTp with SP remains effective in preventing the adverse consequences of malaria on maternal and fetal outcomes in areas where a high proportion of *P. falciparum* parasites exist, therefore, IPTp with SP should still be administered to women in such areas and is recommended for all pregnant women at each scheduled antenatal care visit. This was as a result of meta-analysis of seven trials evaluating SP, of which the findings proved

that three or more doses of SP were associated with higher mean birth weight than two doses.

The impact of intermittent preventive treatment (IPTp) on malaria in pregnancy is well known and documented. Benefits of IPTp includes reduced low birth weight, reduced risk of maternal anemia, absence of placental parasitemia, low neonatal death and reduced incidence of still birth. Menéndez et al.,(2010), conducted a study in Mozambique using a randomized placebo-controlled trials of IPTp-SP and found out that out of the 25-neonatal death observed, 72% occurred in the placebo group whiles 28% occurred in the IPTp-SP group. The study concluded that malaria prevention with SP reduces neonatal deaths.

Similarly, a systematic review on the impact of malaria prevention in pregnancy on low birthweight and maternal anemia by Mcclure, Goldenberg, Dent, & Meshnick.(2013), found out that SP use among primigravidae was consistently associated with decreased low birth weight and anemia rates in clinical trials. Also, in another study Mcclure et al. (2013), evaluated the association between recommended preventive SP programs in pregnancy and low birth weight (LBW) and maternal anemia through available clinical trials and observational evaluation studies, SP use among primigravidae was consistently associated with decreased LBW and anemia rates in clinical trials, however, effects were less consistent in observational studies. It was therefore concluded that randomized trials have demonstrated the efficacy of SP but studies evaluating scale-up programs found less consistent reductions in LBW and maternal anemia. Therefore, additional strategies to improve SP coverage may reduce the LBW and maternal anemia associated with malaria in pregnancy.

2.3 FACTORS AFFECTING GLOBAL UTILIZATION OF IPTp WITH SP

Among the approximately 780 million persons at risk of contracting malaria in endemic countries in sub-Saharan Africa, an estimated 32 million pregnant women could benefit from IPTp each year. However, in countries where this policy is implemented, poor access and low compliance have been widely reported (Mbonye, Neema, & Magnussen, 2006).

Agarwal et al., (2015) reported at the 63rd annual Meeting of the American Society of Tropical Medicine and Hygiene, which focused on global call for action to scale up IPTp of malaria in pregnancy that, coverage has remained unacceptably low in countries with an IPTp policy. Overall, IPTp coverage estimates remain far below global targets set by the RBM Partnership of 80% by 2010, and 100% by 2015 (WHO,2015).

Studies conducted globally revealed several factors accounting for low compliance in malaria endemic countries. For instance, in a study conducted in Uganda by Mbonye et al (2006) on the perceptions on use of IPTp in pregnancy and the policy implications for malaria control using an exploratory approach, findings from the study revealed perceptions that SP is believed to be strong and weakens pregnant women, causes abortions and fetal abnormalities. There was also a perception that resorting first to SP for malaria treatment may lead to the development of drug resistance. This perception may limit access to effective treatment of malaria in this community since the policy in Uganda recommends SP in combination with chloroquine as the first-line treatment.

Similarly, Ameh et al.,(2016) conducted a study in Nigeria using a cross sectional study to identify the barriers and determinants of SP utilization. Findings showed lack of autonomy to use SP in households, stock out of free SP and lack of directly observed therapy of SP at antenatal clinics. The study concluded that there is a need to strengthen primary healthcare systems.

Oyibo & Agomo (2011), conducted a review on the challenges and prospects of scaling up IPTp with SP in Nigeria and identified factors such as timing of SP administration, rising levels of parasite resistance to SP in the general population, effect of folate supplementation and interactions between SP and antiretroviral drugs. They concluded that the implementation of IPTp-SP nationwide would require considerable training of health workers and extensive education of pregnant women and women of child-bearing age on the importance of attending antenatal clinics early in pregnancy as well as the deployment of substantial amount of funds to ensure its success. Also, health workers should be trained and monitored to ensure that SP is given to pregnant women as this will increase coverage which is currently low.

Meanwhile, Masaninga et al (2015) conducted a study on increased uptake of intermittent preventive treatment of malaria among pregnant women in Zambia using a comparative analysis of national surveys and came out with contrary findings to studies in other countries. Findings indicated increased uptake in proportion of IPTp from near zero at its inception in 2001 to 61.9% in 2006 and to 72% by 2012.The findings also revealed that high uptake was associated with urban areas. The study therefore concluded that Zambia has increased IPTp uptake through ANC for all women.

Nonetheless, the means of implementing of IPTp-SP using the ANC as the only point of distribution has also be identified as a challenge to high utilization of this strategy. Literatures reviewed recommend other means of distribution such as home and community based distribution. For instance, in an intervention study comparing the delivery of IPTp service in the community with delivery at health units, Mbonye et al., (2006), identified that 67.5% of the study population received at least 2 doses of IPTp through the community approach compared with health units. Thus, it was concluded that community base delivery of IPTp was effective, even though women still accessed health units for malaria treatment and other services.

Undeniably, increase in IPTp utilization and coverage can also be attributed to the knowledge and attitude of both the caregiver and the receiver of the care. Poor education from the caregiver as a result of insufficient knowledge can result in poor compliance by the receiver.

Mubyazi et al. (2005), investigated the knowledge, attitudes and practices of district health managers and pregnant women on IPTp in Tanzania using a qualitative approach. Findings suggest that majority of ANC staff did not adhere to the directly observed therapy in the administration of IPTp-SP.

Kibusi, Kimunai, & Hines (2015), also conducted a study in Tanzania to identify the predictors for uptake of IPTp and came out with interesting findings. Logistic regression analysis results showed that being in the age groups 30–34 and 35–39 versus other age groups and being married or living with partner versus those who reported as never married or divorced/separated were associated with high uptake of IPTp; in addition, women pregnant with their first or second child versus those who already have had two or more children had higher odds of completing the

recommended number of IPTp dosage. This study actually concluded that, these results if applied could contribute to positive social change by helping providers, clinics, and organizations seeking to increase IPTp uptake among ANC attendees and also providing health education programs to women, especially those residing in rural areas.

2.4 FACTORS AFFECTING IPTp UTILIZTION IN GHANA

In Ghana, the uptake of IPTp-SP has not been impressive. The national malaria control program could not meet its target of 55% uptake of at least 3 doses of IPTp-SP in 2015. (GHS, 2015).Studies conducted on the IPTp-SP strategy has indicated several factors responsible for low uptake by pregnant women in the country. The NMCP identifies a great challenge of SP uptake among private facilities. According to the NMCP, most of these facilities do not report SP uptake and the few that provide regular reports on SP uptake indicates poor utilization (NMCP report, 2015).

Asiedua (2011), conducted a study on the knowledge, practices and challenges of IPTp in pregnancy in the Eastern region of Ghana and identified challenges such as women's failure to complete the SP regimen, women receiving the first dose during advanced stages of their pregnancies and never returning for subsequent doses.

The findings indicate that nurses and midwives' education on malaria prevention during pregnancy should be enhanced.

Likewise, Dako-gyeke & Kofie (2015), conducted a study in urban slums on factors influencing malaria prevention and control among pregnant women using a cross sectional method and found out that factors such as economic condition, type of dwelling and education influence adherence of pregnant women to malaria prevention treatment.

CHAPTER THREE

METHODOLOGY

3.1 STUDY AREA

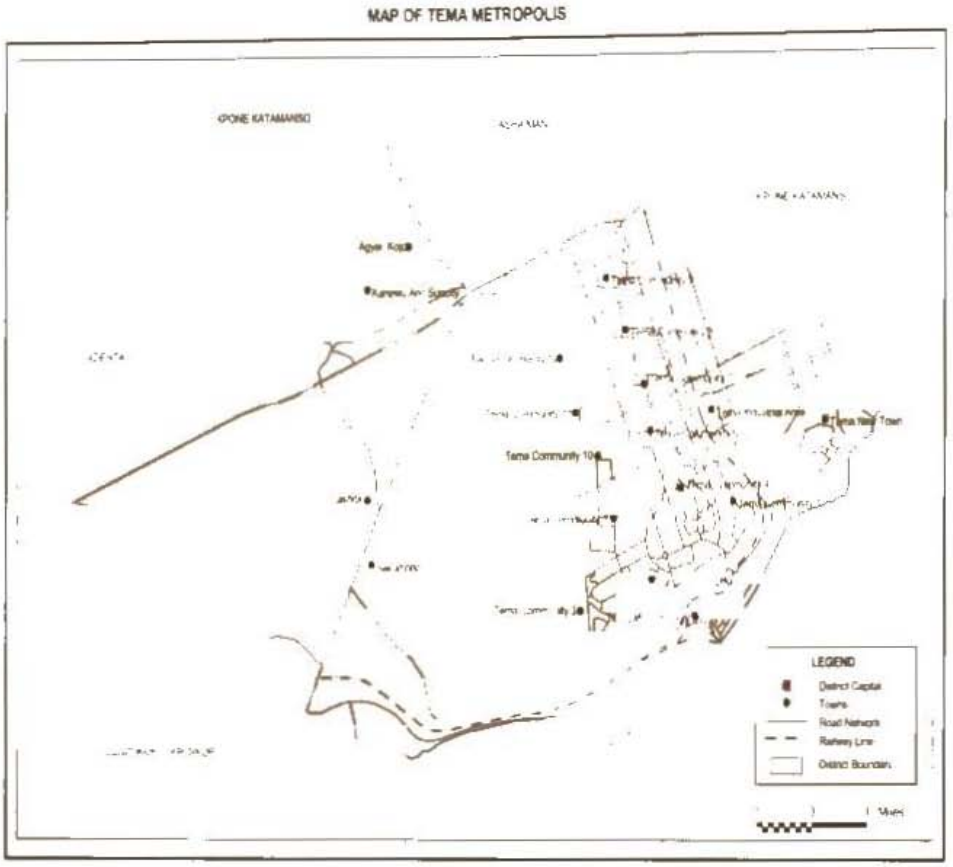
The Tema metropolis of the Greater Accra region was used for this study. The district is divided into 3 sub district, that is, Tema east, Tema west and Tema central. Tema has both public and private health facilities that are spread across the entire Metropolis. The total number of health facilities rendering antenatal and postnatal services is 87, with more than half of this number being private health facilities (NMCP, 2015). Four private hospitals from each sub district were randomly sampled to be used in the study.

Tema Metropolis is a coastal district situated about 30 kilometers East of Accra, the Capital City of Ghana. It shares boundaries in the northeast with the Dangme West District, south-west by Ledzokuku Krowor Municipal, north-west by Adentan Municipal and Ga East Municipal, north by the Akuapim South District and south by the Gulf of Guinea. The Ashaiman Municipal is an in-lock enclave within the Tema Metropolis. The Metropolis covers an area of about 87.8 km^2 with Tema as its capital. The metropolis lies in the coastal savannah zone and the Greenwich meridian passes through the metropolis.

The population of Tema Metropolis, according to the 2010 Population and Housing Census, is 292,773 representing 7.3% of the region's total population. Males constitute 47.8% and females represent 52.2 % (GSS, 2012). Also, 100% of the population live in urban localities. The total age dependency ratio for the Metropolis is 50%, with male dependency being higher (51.3%) than that of the dependency ratio of females' 48.7% (GSS, 2012).The Metropolis has a Total Fertility Rate of 2.3. The

General Fertility Rate is 68.3 births per 1000 women aged 15-49 years which is the sixth highest for the region. The Crude Birth Rate (CBR) is 21.0 per 1000 population (GSS, 2012).

FIGURE 2: MAP OF TEMA METROPOLIS



Source: Ghana Statistical Service, GIS

3.2 STUDY DESIGN

A cross sectional study was conducted at the antenatal and postnatal units of selected private hospitals in the Tema metropolis. Using all private hospitals with antenatal and postnatal services as the sampling frame, hospitals were selected into the study using stratified sampling. Pregnant women in their last two months of pregnancy and nursing mothers who had delivered within the last six months and had attended private hospitals for antenatal service throughout pregnancy were included in the study at the selected hospitals. Participants were enrolled into the study at the Antenatal and Postnatal units consecutively. Data on participants' demographic characteristics, knowledge on SP, number of ANC attendance and experiences with drug side effects were collected using an interviewer administered questionnaire. In depth interviews were organized for heads of midwives at each antenatal center of the selected hospitals using an interview guide to obtain data on knowledge of SP, implementation of DOT, supply of logistics by program implementers and involvement in training programs by the program implementers.

3.3 VARIABLES

The study variables are described in the table below with their operational definition.

Table 1: Variables measured in the study

Variable	Type of variable	Scale of measurement
Utilization of IPTp-SP	Dependent	Categorical 1.uptake of at least 3 doses of SP 2.uptake of less than 3 doses
Age	Independent	Continuous
Marital status	Independent	Nominal
Educational level	Independent	Ordinal
Occupation	Independent	Nominal
Number of children	Independent	Discrete
Number of times attended ANC	Independent	Discrete
Experiences with drug side effects	Independent	Binary -Yes -No
Implementation of Directly Observed Therapy (DOT)	Independent	Binary -Yes -No
Timing of first ANC visit	Independent	Categorical 0.First trimester 1.Second trimester 2.Third trimester
Involvement in training programs by implementers	Independent	Categorical 0.No involvement 1.Low involvement 2.High involvement
Supply of logistics by program implementers	Independent	Categorical 1.timely and adequate 0.delays and inadequate
Knowledge of ANC staff about IPT-SP	Independent	Categorical 1.list all the guidelines 2.list half of the guidelines 3. list less than half
Patient education	Independent	Binary: Yes No

3.4. OPERATIONAL DEFINITION OF TERMS

1. Utilization of IPTp-SP: uptake of three or more doses of SP.

2. Number of ANC attendance: total number of ANC attended throughout the period of pregnancy.

3. Experience of drug side effect: experience of at least one side effect of SP.

4. Implementation of directly observed therapy: ingestion of SP by women under the observation of a midwife.

5. Timing of first ANC visit: stage of pregnancy at which woman reports first to the ANC.

6. Involvement in training program; invitation to workshops and other training programs on malaria by the NMCP.

7. Knowledge of staff on IPTp-SP: ability to mention the WHO guidelines on administration of SP.

8. Patient education; organization of health education on malaria and SP at the ANC.

9. Supply of logistics: rate of supply of SP by the NMCP.

3.5. STUDY POPULATION

The study involved midwives or ANC nurses at selected private facilities, pregnant women in their last two months of pregnancy and postnatal mothers who had delivered within 6 months prior to the study.

3.5.1 Inclusion criteria

1. Pregnant women in their last two months of pregnancy and had been attending ANC at a private hospital were included.

2. Postnatal mothers who delivered within six months prior to the study and attended private hospitals for ANC during pregnancy were included.

3.5.2 Exclusion criteria

1. Pregnant women in their last two months of pregnancy attending ANC at private hospitals and unable to provide consent.

2. Postnatal mothers who never attended a private hospital for ANC services during pregnancy were excluded.

3.6 SAMPLE SIZE

The sample size for the study was calculated using a method by Naing, Winn, & Rusli (2006). An expected prevalence of 30% uptake of IPTp3 was used for the calculation (NMCP, 2015). With a confidence level of 95% and a precision of 0.05, the sample size was 323 for pregnant and postnatal women. With allowance for a non-response rate of 20%, a sample size of 384 was used. Two midwives from each hospital were recruited for the in-depth interview. A 20% non-respondent rate was used because of the vulnerability of the study population that is pregnant women and nursing mothers.

$$n = \frac{Z^2 p(1-p)}{d^2},$$

Where,

Z (Standard value for 95% confidence level) = 1.96

P (estimated prevalence of IPTp 3 among private hospitals in Tema Metro) = 30% (0.3)

d (Margin of error) = 5% (0.05)

Thus, n = $\frac{(1.96)(1.96)(0.5)(0.5)}{(0.05)(0.05)}$

$= 322.7$

$=323$

Twenty percent non-respondent rate of 323 is 64, which when added to the value of 'n' gives a total sample size of 384.

3.7 SAMPLING MEHOD

A total of 12 private facilities in the Tema metropolis were selected using stratified sampling. Thus, with facilities rendering both antenatal and postnatal services as the sampling frame, four hospitals were randomly sampled from each sub districts. These included Port Medical Centre, Lagoon clinic, TMA maternity, Mother of God hospital, Bethel hospital, New Crystal hospital, Rapha medical Centre, Fiden medical Centre, Speed clinic, Sun City medical Centre, Trinity Community hospital and Meridian clinic. A total of 32 participants were enrolled consecutively from each selected facility from the three sub districts. The head midwife in charge of ANC from each facility were purposively sampled and recruited for the in-depth interview.

Table 2: Breakdown of sampling method

Sampling frame	**Sampling strata**	**Facility sampling**	**Participant sampling**
All private hospitals which organizes focus ANC	Tema east, n=8 Tema west, n=12 Tema central=18	Four facility from each stratum.	32participants were recruited consecutively at each facility from each stratum.

3.8 ETHICAL CONSIDERATIONS

Ethical considerations included gaining access to the research site, informed consent, not causing harm in terms of the questions asked, confidentiality and anonymity of respondents. Ethical approval was sought from the Ghana Health Service (GHS-ERC: 17/12/2016) and approval was sought from the district director of health services of the Tema metropolis. Permission was also gained from the administrators and unit heads of all the private facilities that were involved in the study.

A written consent form was obtained from participants before data was collected. Respondents were assured of confidentiality and anonymity. Privacy was ensured as questionnaire interviews were undertaken in enclosed areas of the facilities. Oral consent was sought from all the respondents and they were informed that participation was voluntary and they had the right to withdraw from the study at any point in time.

3.8.1 Data storage and usage

All information that were obtained from the respondents were kept under key and lock and on a password protected computer.

3.8.2 Training of research assistants

A total of five research assistants were recruited and trained for three days on questionnaire administration and in depth interview skills.

3.8.3 Pre-testing and review of tools

A pilot study was conducted at the Atlantis hospital, which is a private hospital in the Kpone district from the study population to identify potential problems in the questionnaire and the response rate of pregnant women and midwives. The tool for

data collection was a questionnaire for the quantitative data collection and an interview guide for the qualitative data collection.

3.9 DATA COLLECTION TOOL AND METHODS

Data was collected using an interviewer questionnaire for the quantitative aspect of the study and an interview guide for the qualitative aspect of the study.

Questionnaires were designed purposely for the study and included sections on respondents' demographic characteristics, knowledge on IPTp-SP, antenatal attendance and utilization of IPTp-SP. Together with five trained research assistants, information from the respondents at the ANC and PNC clinics was collected. Respondents were approached for questionnaire interview lasting for about fifteen minutes maximum after they have had their ANC section with their midwives for the day. Demographic information such as age, marital status, educational level occupation and number of children were collected from respondents using the questionnaire. Information on patient factors affecting utilization of IPTp-SP such as knowledge of patient on SP, experience of drug side effects and total number of ANC were also taken from the respondents. Information given by respondents were verified from ANC folders if available. The midwives in charges were interviewed in their offices one on one using an interview guide with coded themes to direct the flow of interaction. Information on variables that falls under the service provider factors such as knowledge on IPTp-SP, implementation of DOT, support from program implementers and patient education were gathered. An audio recorder was used to record all information extracted during the interview and one trained research assistant stood by to take notes of non-verbal expressions and important points.

3.9 DATA PROCESSING AND ANALYSIS

Analyses were performed using STATA 14.

Descriptive statistics was used to calculate for service provider factors, patient factors, demographic characteristics and IPTp uptake. Chi-square test was used to assess socio-demographic differences in IPTp uptake. The level of significance was set at P <0.05, two tailed for all the analyses. Both bivariate and multiple logistic regression were used to generate crude odds ratio and adjusted odds ratios. Odds ratios was used to assess the strength of the associations using 95 % confidence intervals for significance testing. All the covariates which showed statistically significant relationship ($P < 0.05$) with the outcome variable after Chi-square test was entered simultaneously into the multiple regression model. The qualitative analysis was transcribed manually. The data were analyzed by summarizing findings at the end of the day per each interview using themes that brings similar views from different respondents together. Individual responses from various midwives were transcribed and various themes generated. Generally, variables were ranked high or good if six or more respondents provided similar answers and ranked low or poor if less than six of them provided similar answers.

CHAPTER FOUR

RESULTS

4.1 SOCIO- DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

A total of 384 participant made up of pregnant women in their ninth month of pregnancy and nursing mothers who had delivered within the past six months participated in the study. The mean age of the women was 29.3 years,(SD± 6.0) .One hundred and sixty one 161/384 (41.9%) of them were aged 30-39yrs,whilst 193/384(50.3%) were aged 20 - 29yrs, 18/384 (4.7%) were aged between 40 to 47 and 12/384 (3.1%) were aged between 10 to 19years.The highest level of education for most 200/384 (52.1%) of the respondents was basic education , 97/384 (25.3%) of them having attained secondary education and 61/384(15.9%) had no formal education. Most (77.6%) of the respondents were married, 15.9% were cohabiting with partners and 6.5% were single. A high proportion (71.9%) of the respondents were self-employed, 19.5% were unemployed and 8.6% were employed in the government/private sector. Those who had 1-3 children were 346 whiles 38 had more than 3 children (Table 3).

Table 3: Socio-demographic characteristics of respondents

Variable	Number	Percentage
Age		
10-19	12	3.1
20-29	193	50.3
30-39	161	41.9
40-49	18	4.7
Marital status		
Single	25	6.5
Married	298	77.6
Cohabiting	61	15.9
Education		
No formal education	61	15.9
Basic	200	52.1
Secondary	97	25.3
Tertiary	26	6.8
Occupation		
Government/private	34	8.9
Self employed	275	71.6
Unemployed	74	19.3
Number of children		
Less than 3	346	90.1
3 or more	38	9.9

4.2 UPTAKE OF IPTp-SP AMONG RESPONDENTS

Out of the 384 respondents, 205 (53.4%) had taken less than 3 doses of SP by their last month of pregnancy and 179(46.6%) had taken 3 or more doses by their last month of pregnancy (Table 4).

Table 4: Uptake of IPTp-SP among respondents

Category	Frequency	Percentage (%)
Less than 3 doses	205	53.4
3 or more doses	179	46.6

4.3.0 PATIENT FACTORS AND HOW THEY AFFECT UPTAKE

4.3.1 Socio-demographics characteristics of respondents and IPTp –SP uptake

Using the chi square test, there was no significant association between socio-demographic characteristics of respondents and uptake of IPTp-SP, ($p>0.05$). The uptake of less than three doses of SP among the 298 respondents who were married was 158/298(77.11%) and 140/29(78.2%) had taken more than three doses. Of the 205 respondent who had taken less than 3 doses of SP, 15/205(7.3%) were single, 158/205(77.1%) were married and 32/205(15.6%) were cohabiting with partners. Also, of the 179 respondents who had taken at least 3 doses of SP, 10/179(5.6%) of them were single, 140/179(78.2%) were married and 29/179(16.2%) were cohabiting.

Education was found to have an insignificant effect on IPTp-SP uptake. For those who had taken less than 3 doses, 32/205(15.6%) had no formal education, 102/205(49.8%) had basic education, 56/205(27.3%) had secondary education and 15/205(7.3%) had completed tertiary education. Among 179 respondents who had taken at least three doses, 29/179(16.2%) had received no formal education,

98/179(54.7%) had basic education, 41/179(22.9%) had tertiary education and 11/179(6.2%) had completed tertiary education.

With regards to uptake of less than three doses of SP and respondents occupation, 15(7.3%) were formally employed in the government or private sector, 145(70.3%) were self-employed and 45(22%) were unemployed. For those who had taken at least three doses of SP, 18(10.1%) were government /private employees, 131(73.2%) were self-employed whiles 30(16.8%) were unemployed. Of the 33 respondents who were government /private workers, 10.1% had taken the required three or more doses. 22% of the 75 unemployed respondents had taken 3 or more doses (Table 5).

Table 5: Socio-demographic characteristic and IPTp-SP uptake

Socio-demographic characteristics	Total (N=384)	<3 doses N (%)	≥ 3 doses N (%)	P value
Marital status				0.79
Single	25	15(7.3%)	10(5.6%)	
Married	298	158(77.1%)	140(78.2%)	
Cohabitation	61	32(15.6%)	29(16.2%)	
Education				0.70
No formal education	61	32(15.6%)	29(16.2%)	
Basic	200	102(49.8%)	98(54.8%)	
Secondary	97	56(27.3%)	41(22.9%)	
Tertiary	26	15(7.3%)	11(6.1%)	
Occupation				0.33
Government /private	33	15(7.3%)	18(10.1%)	
Self employed	276	145(70.7%)	131(73.2%)	
Unemployed	75	45(22%)	30(16.8%0	
Age (years)				0.32
10-19	12	4(2%)	8(4.5%)	
20-29	193	101(49.3)	92(51.4)	
30-39	161	92(44.9)	69(38.5%)	
40-49	18	8(3.9)	10(5.6%)	
Number of children				0.26
Less than 3	347	182(88.8%)	165(92.2%)	
3 or more	37	23(11.2%)	14(7.8%)	

Table 6: Respondents knowledge on Malaria, IPTp and uptake of SP

Variable	Total	< 3 doses	≥ 3doses	P value
SP in previous pregnancy				0.118
Had previous SP	320	168(89.8%)	152(94.4%)	
Had no previous SP	28	19(10.2%)	9(5.6%)	
Signs and symptoms of malaria				0.261
Could Mention three	294	162(79%)	132(74.2%)	
Could not mention three	89	43(21%)	46(25.8%)	
Malaria transmission				0.489
Could mention mosquito	373	198(96.6%)	175(97.8%)	
Could not mention mosquito	11	7(3.4%)	4(2.2%)	
Effect of MIP(still birth)				0.170
Mentioned stillbirth	201	114(55.6%)	87(48.6%)	
Could not mention stillbirth	183	91(44.4%)	92(51.4%)	
Effect of malaria(maternal death)				0.832
Mention maternal death	292	155(75.6%)	137(76.5%)	
Could not mention maternal death	92	50(24.4%)	42(23.5%)	
Awareness of IPTp-SP				0.864
Aware of IPT-SP	301	160(78.4%)	141(78.8%)	
Not aware of IPT-SP	83	45(21.9%)	38(21.2%)	
Reason for IPTp-SP				0.409
Says is for malaria prevention	257	141(68.8%)	116(64.8%)	
Could not say is for prevention	127	64(31.2%)	63(35.2%)	
Number of tablets of SP at a dose				
Says 3 tablets	286	149(72.6%)	137(76.5%)	0.388
Could not say 3 tablets	98	56(27.3%)	42(23.5%)	
When to take 1st dose				0.420
Could say after quickening/16 weeks	161	90(43.9%)	71(39.7%)	
Could not say after quickening/16	223	115(56.1%)	108(60.4%)	
Minimum required dose				0.420
Could say 3 doses	155	87(42.4%)	68(38%)	
Could not say 3 doses	228	117(57.1)	111(62%)	

4.3.2 Respondents knowledge on malaria and IPTp-SP and uptake

There was no observed association between respondents knowledge on malaria and the uptake of IPTp-SP ($p>0.05$).There was also no significant relationship between respondents knowledge of IPTp-SP and uptake of SP, ($p<0.05$), (Table 6).

4.3.4 Antenatal attendance and IPTp-SP uptake

There was a significant association between timing of first ANC visit and the uptake of IPTp-SP, ($p<0.001$).Ninety-eight (55.4%) of respondents who reported to ANC in their first trimester took at least three doses of IPTp-SP whilst 79(44.6%) took less than three doses. For those who reported in their second trimester, 106/183 respondents took less than three doses of SP and only 77/183 took the required dose of at least three. For those who attended the ANC in their last trimester, 20/24 had taken less than three doses and only 4/24 had taken at least three doses. The number of respondents who took three or more doses increases for early first ANC attendees. The effect of total number of ANC visits by the ninth month was observed to be significantly associated with uptake of IPTp-SP. Number of ANC visits was categorized as ≤ 5 and > 5 visits. Fifty of respondents who had come for ≤ 5 ANC visits had taken the required dose of at least three, with 142/192 taking less than three. However, 129/192 of respondents who had > 5 ANC visits had taken three or more doses. Number of ANC visits was observed to have a significant association with uptake. High number of ANC visits increases the uptake of IPTp-SP. Delay at ANC and access to transportation to ANC did not have any significant association with the uptake of IPTp-SP ($p>0.05$).

Table 7: Antenatal factors and IPTp-SP uptake

Variable	Total	<3 dose	≥3 doses	P value
Timing of first ANC visit				<0.001*
First trimester	177	79(38.5%)	98(54.8%)	
Second trimester	183	106(51.7%)	77(43.0%)	
Third trimester	24	20(9.8%)	4(2.2%)	
Total no of ANC visit				<0.001*
At most 5 visits	192	142(69.3%)	50(27.9%)	
More than 5 visits	192	63(30.7%)	129(72.1%)	
Influence of ANC delay				0.696
Affected uptake				
Didn't affect uptake	74	38(18.5%)	36(20.1%)	
	310	167(81.5%)	143(79.9%)	
Health education at ANC				0.222
Carried out	240	120(58.5%)	120(67%)	
Not carried out	142	84(41%)	58(32.4%)	
Influence of transport				0.804
Affected uptake	75	41(20%)	34(19%)	
Didn't affect uptake	309	164(80%)	145(81%)	

* = Statistical significance

4.3.5 Implementation of Dot, drug side effects and IPTp-SP uptake

Whether DOT was implemented or not had no significant association with the outcome of IPTp-SP uptake. Out of the 205 respondents who took less than 3 doses of SP with regards to whether DOT was implemented or not, 154(75.1%) took SP under DOT whiles 51(24.9%) took the drug home. For those who took at least three doses, 137/179(76.5%) took SP under DOT and 42/179(23.5%) took the drug home. Provision of information on SP by midwives before administration by midwives was

found to be significantly associated with uptake of SP. Concerning the giving of information on drug by midwives during administration, 234 of the respondents received information from nurses prior to administration, out of this,53.2% took less than three doses and 71.2% took three or more doses. Out of 146 respondents who received no prior information to administration of SP,46.8% took less than three doses and 28.8% took three or more doses ($p<0.001$). Chi square test showed no significant association between uptake of IPTp and experiencing of side effect. Also no significant association was observed between patients' preference of DOT and uptake. Malaria infection whiles on IPTp and whether respondents ever took SP home were also found not to be significantly associated with uptake.

Table 8: Implementation of Dot, drug side effects and IPTp-SP uptake

Variable	Total	<3 N (%)	≥ 3 N (%)	P value
Implementation of DOT				0.804
Dot observed	291	41(20)	137(76.5)	
No DOT observed	93	164(80)	42(23.5)	
Prior information on drug by nurse				<0.001*
Information given	234	108(53.2)	126(71.2)	
No information given	146	95(46.8)	51(28.8)	
Experience of drug side effect				0.452
Experienced side effect	152	77(38.1)	75(41.9)	
Did not experience side effect	229	125(61.9)	104(58.1)	
Preference of DOT				0.278
Likes taking SP under DOT	238	131(65.2)	107(59.8)	
Does not like taking SP under DOT	142	70(34.8)	72(40.2)	
Ever taken drug home				0.435
Has taken drug home	112	63(31.2)	49(27.53)	
Never taken drug home	268	139(68.8)	129(72.5)	
Malaria infection while on IPTp-SP.				0.361
Suffered malaria.	42	25(12.4)	176(87.6)	
Didn't suffer malaria	338	17(9.5)	162(90.5)	

Table 9: Respondents suggestions and recommendations to increase utilization

Variable	Frequency	Percentage
Suggestions on some barriers		
Side effects	83	21.7
Ignorance	77	20.1
Less information given	92	24
Late reporting to ANC	49	12.8
Poor attendance to ANC	35	9.1
Poor education	47	12.3
Recommendations to improve uptake.		
Change drug	59	15.4
Increase awareness	109	28.5
Increase education	126	32.9
Community distribution	38	9.9
Advertise on TV	51	13.3

4.3.6 ASSOCIATIONS BETWEEN VARIABLES AND UPTAKE OF IPTp-SP

A simple logistic regression was further used to observe the associations between variables that showed significant effect on uptake of IPTp-SP. Results from the logistic regression indicated that the odds of IPTp-SP uptake is 2.2 times more likely in respondents who had information given to them prior to SP administration compared to those who had no information given to them. (OR 2.2, 95% C.I, 1.34-3.47).Also, respondents who had attended ANC >5 times were 83% less likely to have taken <3 doses of SP compared to those who had attended ≤ 5 times. (OR 0.17, 95% C.I 0.12-0.31). The odds of taking less than 3 doses of SP among respondents whose timing of first ANC visit was in the 3rd trimester was increased by a factor of 2.18 compared to those whose first ANC visit was in the 1st trimester (although finding was not significant)(OR 2.18,C.I 0.65-7.31) (Table 10).

Table 10: Crude and adjusted associations between variables and uptake of IPTp-SP

Variable	Crude OR	95%CI	Adjusted OR	95%CI
Drug information by nurses				
Information given	0.46	0.30-0.70	2.16	1.34-3.47
No information given	1		1	
Timing of 1st ANC visit				
1st trimester	1		1	
2nd trimester	1.71	1.13-2.59	1.18	0.73-1.90
3rd trimester	6.20	2.04-18.89	2.18	0.65-7.31
Number of ANC visits				
5 or less	1		1	
More than 5	0.17	0.11-0.2	0.19	0.12-0.31

4.4.: SERVICE PROVIDER FACTORS AND UPTAKE OF ITP-SP.

Twelve midwives in charge of antenatal clinics in selected private hospitals were interviewed. Their professional qualification ranged from professional staff midwife, principal midwifery officer and retired midwife. The number of years worked at ANC in private facilities ranged from a minimum of two years to ten years. Findings revealed information on service provider factors under the following themes.

4.4.1 Knowledge on malaria and IPTp- SP

Generally, the qualitative part of the study revealed a low level of knowledge among the twelve midwives on the standard guidelines on SP administration, but the level of knowledge on the side effects of SP was high. Almost all 12 midwives interviewed could only mention two of the seven standard WHO guidelines for the administration of IPTp-SP. All the Respondent talked about testing for G6PD first before administering SP and also spoke about starting SP after quickening. Almost all

respondents could also verbalize the giving of IPTp-SP at monthly intervals from sixteen weeks till delivery. These findings are evident by quotes from respondents;

"SP is taken during pregnancy at 16 weeks or after quickening" (staff midwife, Tema east).

"People with G6PD defect cannot take the drug so we insist they run the test before we give" (principal midwife, Tema central).

Also, all twelve respondents expressed good knowledge on side effects of SP. Dizziness, weakness, headache and vomiting were mentioned by all respondents. These side effects, according to respondents are minimized when patient takes a heavy meal before taking SP. Some responses from the interaction includes;

"Some side effects of SP are dizziness, vomiting and weakness" (midwifery officer, Tema east).

"Patients mostly complain of dizziness, vomiting, headache and weakness" (senior staff midwife, Tema west).

Knowledge on malaria in pregnancy and the need for IPTp-SP was also good, as ten of the twelve respondents mentioned four main effects of malaria infection during pregnancy. They included spontaneous abortion, maternal anemia, intra uterine growth retardation and low birth weight. However, two respondents were unable to mention the effect of malaria in pregnancy, their response to the question regarding malaria in pregnancy was;

"Is a long time I came for retirement, I don't remember those things" (retired midwife, Tema central)

"I am not a professional midwife, am just heading the ANC unit" (staff nurse, Tema central)

4.4.2 Information and health education on IPTp-SP

The study further explored how often pregnant women are educated on malaria and on SP as a preventive therapy. Respondents from seven of the twelve facilities said they educate the women on malaria at each ANC visit. The five remaining respondents said that even though health education is done at each ANC visit, malaria education is done occasionally since there are several other topics to be treated. Responses included;

"We educate them at each ANC visit on how to protect themselves from mosquitoes. We even give them mosquito nets to use if available" (midwifery officer, Tema east)

"There are several topics to educate the women on, so once in a while we educate them on malaria, but we always encourage them to sleep in mosquito nets" (retired midwife, Tema west).

When probed further to inquire if detailed health education is given on IPTp-SP, almost all the midwives answered negatively. According to them, education on IPTp-SP comes up only when health education on malaria is being given.

4.4.3 Implementation of DOT

The interview revealed that IPTp-SP is not strictly administered as DOT in the private settings. The midwives interviewed confirmed that DOT is not strictly enforced because the women have the preference of taking the drug home to take in the comfort of their rooms and they are allowed because it is a private hospital. In fact two of the facilities make the women collect the drug at the pharmacy, thus the

midwives have no chance to implement DOT or document uptake of the drug. According to the midwives from these two facilities, that is the protocol of the hospital and nothing can be done about that because it is a private facility. Some of the responses recorded are;

"Patients prefer to take the drug home and eat before taking it so we don't strictly go by the DOT" (staff midwife, Tema east).

"The pharmacy keeps all the SP drug so if a client is due for the drug, I write it on a prescription form to go to pharmacy for it" (retired midwife, Tema central)

4.4.4 Documentation

Findings showed effective documentation on IPTp-SP uptake. All twelve respondents stated that IPTp-SP uptake is documented in the antenatal folder and in the ANC registry, which is the standard protocol for documentation of SP. Number of uptake of IPTp-SP for each client is documented by their name in the register. Responses given included;

"Once we give the drug to the patient, we document in their folder and in our ANC register" (midwifery officer, Tema east).

4.5. PROGRAM FACTORS

The findings of the interview with regards to the program factors that affect uptake are grouped under the following themes.

4.5.1 Involvement in training programs

Respondents were asked if they were included in training programs organized by the NMCP and all twelve answered in the affirmative. Thus all the twelve midwives

confirmed that the NMCP organizes frequent workshops of which they are always invited to. Some extracts from the recordings were;

"Yes they invite us for programs, I went for one in April" (staff midwife, Tema east).

"They invite us always but sometimes you can't get any staff to go"

4.5.2 Supply of drug

When asked about how timely and adequate supply of SP is, the common theme that generated was that supply is based on what the facility requests. Timely submission of request results in timely supply of drug. Some responses given were;

"Yes we are supplied on timely basis but you see, supply depends on your request, if you send your request early, they will supply you"

Regarding the question of whether they have run out of supply and the effect it had on IPTp-SP, all the respondents said yes but that happened only once when the national drug store was burnt. A majority also added that they have never run out after the fire incident since measures were put in place to solve the shortage problems. Some of the extracts from the recordings are;

"Just once when the national drug store got burnt, there was shortage of the drug but since they rectified it, we have never run out" (retired midwife, Tema central)

"Yes, we ran out when the national central store got burnt, during that time we wrote prescription for them to buy from pharmacy" (senior staff midwife, Tema west).

4.5.3 Monitoring and evaluation

The interview revealed that level of monitoring and evaluation by program implementers in private facilities is good. About eight respondents reported that NMCP representatives from the sub metro unit do come occasionally but four of them stated that program implementers do not come. However all twelve respondents stated that they submit monthly reports on IPTp-SP uptake to the metro unit of the NMCP.

"Report is submitted every month, if we delay and don't send it, they call us from the metro office."

CHAPTER FIVE

DISCUSSION

A cross sectional descriptive study was conducted in selected private hospitals in the Tema metropolis to identify barriers to utilization of intermittent preventive treatment (IPTp) with Sulfadoxine pyrimethamine (SP) in pregnancy. Findings from this study show that less than 50% of the women who received antenatal care (ANC) services at these health facilities received the required minimum of three doses of SP during their most recent pregnancy in the metropolis. Also, 58.4% of respondents who reported to ANC in their first trimester had taken at least 3 doses of SP, whilst 43.3% and 2.2% had taken at least 3 doses in their second and third trimester respectively. Half of the respondents had information on drug given to them by midwives prior to administration, out of this, 21% took 3 or more dose whiles 79.9% of the remaining half received no prior information. Also, respondents who attended ANC more than five times increased their uptake of IPTp-SP by 83% compared to those who attended at most five times. Qualitative analysis showed poor adherence to DOT, effective documentation, low knowledge of midwives on IPTp-SP and active support of program implementers on IPTp-SP as an intervention.

5.1: UPTAKE OF THREE OR MORE DOSES

Findings from the current study indicate that uptake of SP at the facilities studied was far below the national target of 55% uptake of at least three doses of SP and this has implications for malaria prevention in pregnancy. This can lead to increase incidence of malaria in pregnancy and its detrimental effect on pregnancy outcome including still birth, maternal anemia and low birth weight(Desai et al., 2007).

Comparing the 46.6% uptake of at least 3 doses of SP as found in the current study to the documented uptake of 18.8% as reported by the NMCP in 2015, there is a big difference between the two. It is not clear where the difference comes from but factors such as poor capturing of data and reporting of information to the NMCP by the facilities may be contributing to the difference. These private facilities are more likely to concentrate on their core business as service providers than collecting data for another institution. This difference could also be due to improvement in the uptake of the drug as a result of timely and adequate supply of logistics to the facilities and frequent monitoring and evaluation carried out by the NMCP as identified during the in-depth interviews. Scale up measures must be intensified in private facilities by the NMCP and if possible provide support for data collection. Similar to this findings, Agarwal et al.,(2015), also reported that overall IPTp-SP coverage remain far below global targets set by the RBM Partnership of 100 % by 2015. Another similar study by Wanzira et al, (2016) in Uganda reported 45.16% uptake of at least two doses of SP(their national minimum recommended uptake). These findings show a general low uptake of SP in most African countries where this strategy is being implemented, hence the need to address challenges and barriers in order to increase uptake. Contrary to the findings from the current study, Masaninga et al. (2016), conducted a study in Zambia on the increased uptake of IPTp-SP and found out that the proportion of pregnant women taking IPTp-SP has increased from near zero at its inception in 2001 to 72% by 2012. The difference in these findings could be attributed to the difference in the national recommended number of required doses in the different countries. Zambia recommended uptake of at least two doses as at the time of their study whilst Ghana recommended the uptake of at least three doses.

5.2:0 PATIENT FACTORS AND HOW IT AFFECTS IPTp-SP UPTAKE

5.2.1: Socio demographic characteristics and uptake

Respondents' demographic characteristics were expected to have an influence on the uptake of IPTp-SP, but analysis of respondents' demographic factors such as age, marital status, educational level, number of children and occupation showed no significant associations with IPTp-SP uptake. This implied that demographic disparities among pregnant women attending private facilities have reduced effect on uptake of IPTp-SP. The NMCP can emphasize on other patient related factors in addressing the issue of low uptake of SP among private facilities.

However, Kibusi et al. (2015) also conducted a study in Tanzania to identify the predictors for uptake of IPTp and came out with different findings. They reported that being in the age groups 30–34 and 35–39 versus other age groups and being married or living with partner versus those who reported as never married or divorced/separated were associated with high uptake of IPTp. In addition, women pregnant with their first or second child versus those who already had two or more children had higher odds of completing the recommended number of SP dosage. These differences in findings could be attributed to the different environmental settings used in the study.

5.2.2 Knowledge of respondents and uptake

Findings from the current study show that there was no association between a woman's knowledge on IPTp-SP and the uptake of SP, ($p>0.05$). Respondents' ability to answer correctly questions that assessed their knowledge did not show more uptake of SP compared to those whose level of knowledge was low. The health talks giving on malaria at the ANC which 62.5% of respondents confirmed attending may

not have imparted to them adequate knowledge on malaria prevention and benefits of taking SP. This implies that the documented low uptake could be attributed to lack of adequate knowledge on IPTp-SP to cause the behavioral change that is likely to increase uptake of SP. Contrary to the finding in this study, Wanzira et al (2016), found out from their study conducted in Uganda that women who had knowledge about SP as a malaria prevention measure in pregnancy were more likely to take the drug compared to those who had no knowledge.

Likewise, Onyeneho,et al.,(2013), in their study in Nigeria that assessed the characteristics of Nigerian women taking SP reported that there was a strong positive association between knowledge of respondents on malaria and uptake of SP, which is contrary to the findings of the current study. This difference could be attributed to the wide differences in the environmental setting and socioeconomic status of respondents in the former study which was also found to be significantly associated with uptake of SP.

Another major finding from this study was the giving of information by midwives prior to SP administration, which was positively associated with uptake of SP. This finding is vital considering the fact that even though respondents' knowledge had no significant association with uptake, their awareness of SP as a preventive drug against malaria just at the time of administration improved their compliance to take the drug. The implication of this finding is that general health education section at the ANC which is meant to equip women with knowledge on IPTp-SP may have to be reassessed since it has no significant effect on uptake. Respondents who got adequate detailed prior information from midwives regarding need for SP for malaria prevention and the potential side effects had an increased uptake of at least three

doses compared to those who received no information. Hence, one way to scale up uptake is to emphasize on detailed drug information just at the time of administering SP to pregnant women. Findings from the in-depth interview also buttressed the fact that topics for health talks at the ANC are usually on malaria and not specifically on IPTp-SP. A majority of the midwives interviewed mentioned that health education on malaria is done at each ANC but do not emphasize on education on IPTp-SP. It is high time ANC health education emphasizes specifically on IPTp-SP as a strategy.

5.2.3: Antenatal attendance and uptake.

The study identified late reporting for ANC and a few number of visits as the main factors contributing to low uptake of SP. Women who had their first attendance to ANC during their first trimester recorded a high uptake of SP compared to those who reported in their second and third trimester. Early reporting for ANC and receipt of SP during week sixteen of pregnancy showed an increase in uptake of three or more doses by the time the women delivered. On the other hand, reporting in the third trimester of pregnancy resulted in uptake of less than three doses since time may also be delayed in carrying out important investigation such as G6PD that are critical to start the administration of SP. The achievement of taking more than three doses for late reporters is highly impossible. The NMCP can adopt other means of delivery, such as community distribution of SP in order to increase uptake for late ANC reporters so that the national target of 55% can be achieved. Similar to the findings from a study conducted by Asiedua, (2011), late reporting to ANC was also identified as a significant factor contributing to the poor uptake of the national recommended dose of IPTp. Factors such as drug side effects and lack of funds for transportation were also found to be associated with SP uptake (Asiedua, 2011). This was contrary

to the findings of the current study in which experience of drug side effects and money for transportation had no significant influence on IPTp-SP uptake.

Early reporting to ANC was found to increase uptake, higher number of ANC visits which is the result of strict adherence to ANC was found to be associated with higher uptake of SP. hence, provided monthly ANC schedules are adhered to, the recommended uptake of three or more doses is highly achievable. Adherence to ANC schedules reduces to a greater extent the number of missed doses of SP uptake.

5.2.4: Implementation of DOT, drug side effects and IPTp-SP uptake

Findings from the study show that the implementation of DOT was not significantly associated with the uptake of SP, even though the WHO recommends the use of DOT in the administration of SP. This could mean that DOT is not being used in the administration of IPTp-SP among private facilities considering the fact that less than 50% of the respondents had taken at least three doses of SP. A majority of the midwives interviewed reported that DOT was not adhered to in their facilities because women preferred taking the drug home. Taking of SP home increases the chances of missed doses for women because of forgetfulness or intentional refusal to take drug. Contrary to the current finding, Ameh et al. (2016), in a cross sectional study in Nigeria identified lack of directly observed therapy of SP at antenatal clinics as a problem leading to low utilization of IPTp-SP.

Other earlier studies had also identified association between experience of side effects and uptake of SP but the current study did not reveal any such relationship. For instance, Mbonye et al. (2006), studied the perceptions on use of IPTp-SP in pregnancy and the policy implications for malaria control using an exploratory

approach. Their findings revealed that SP is believed to be strong and weakens pregnant women, causes abortions and fetal abnormalities. This perception may limit access to effective treatment of malaria in that community since the policy in Uganda recommends SP in combination with chloroquine as the first-line of treatment.

5.3.: SERVICE PROVIDER FACTORS AND HOW IT AFFECTS IPTp-SP UPTAKE

The qualitative analysis of the in-depth interview in this study revealed a low level of knowledge on IPTp-SP among midwives at the antenatal units. Almost all the twelve midwives interviewed could mention only two of the seven standard guidelines recommended by WHO in the administration of SP. None of the midwives interviewed could mention other components of the WHO guidelines such as contraindication of SP in women on co- trimoxazole and skipping of folic acid on the day of SP administration as it reduces its efficacy as an antimalarial. This could have very serious implication on the efficacy of SP as the drug of choice for malaria prevention in pregnancy because the drug interaction between SP and folic acid renders SP ineffective for the purpose for which it is given and the potential for drug resistance. Likewise, serious drug reactions have been observed in women who take SP whiles on co-trimoxazole, hence poor knowledge of midwives on guidelines could result in some women experiencing serious adverse reactions and eventually affect their uptake of subsequent doses. Nonetheless, reports from the 2012 review committee of the WHO recommends that IPTp-SP must be administered following seven guidelines, (WHO report, 2012). These guidelines if adhered to, reduces the chances of women experiencing adverse drug reaction and maintains the efficacy of SP in order to achieve higher coverage. It is important that midwives and ANC workers improve their knowledge on these guidelines.

Also in line with findings from this study, Mubyazi et al. (2005), investigated the knowledge, attitudes and practices of district health managers and pregnant women on IPTp in Tanzania using a qualitative approach. Findings from the study suggest that majority of ANC staff did not adhere to the recommended guidelines in the administration of IPTp-SP due to their low knowledge on the strategy.

Rabiu et al.(2014), also investigated malaria prevention practices and treatment in pregnancy among private medical practitioners in Lagos and found out that private practitioners had poor knowledge of malaria prophylaxis in pregnancy and most practices do not conform to WHO guidelines. Even though results from this study is consistent with that of the current study, different methodologies were used. The former used a quantitative approach to assess knowledge of private healthcare workers whiles the latter used a qualitative approach.

IPTp-SP is to be given freely and under direct observation of the midwife for effective documentation to take place. However, findings from this study revealed the dispensing of SP at pharmacies in some facilities. This contradicts the national protocol of giving SP using DOT and prevents proper documentation and reporting of IPTp-SP uptake.

5.4: PROGRAM FACTORS

The assessment of program factors affecting uptake was achieved using a qualitative method. Findings revealed a total program support from program implementers regarding training programs, supply of logistics, monitoring and evaluation. Responses from the interview revealed that program implementers provided full support to private facilities. Thus the low documented uptake of IPTp-SP in private facilities cannot be attributed to program inefficiencies. Comparing this finding to the

2015 report by the GHS on IPTp-SP uptake, which mentioned stock shortages and delay in procurement processes as factors influencing low uptake of IPTp-SP in the country, it was observed that measures have been put in place by the NMCP to scale up the uptake of IPTp-SP. Agarwal et al. (2015) also revealed that SP stock-outs were not an issue for low uptake of SP when surveys were conducted. Surveys that were done revealed high variability across health facilities within the same district and highlighted the need to monitor and to intervene at the facility level to overcome barriers to SP, as well as to make distinctions between issues that are driven by individual providers and those related to facilities.

In depth interviews carried out among midwives at the different private facilities revealed that facilities have never run out of supply of SP, because supply was based on timely request. Other studies done in other parts of Africa however had contradicting findings. For instance, findings from a cross sectional study by Ameh et al (2016) in Nigeria to identify the barriers and determinants of SP utilization indicated stock out of SP at antenatal clinics as a barrier to SP utilization.

In Another study by Mubyazi et al.(2014), findings from the analyses of both qualitative and quantitative data revealed inadequate and inconsistent SP supply, poor record keeping and low supply of SP.They concluded that concerted measures are urgently needed to accommodate data on new interventions and other vertical programs if malaria programs are to achieve their goals.

5.5 LIMITATIONS OF THE STUDY

The main limitation of the study includes recall bias which may result from the inability of respondents who were nursing mothers to recollect all that happened

during their ANC visits of their last pregnancy. A brief description of SP as the three tablets in one dose to respondents minimized the bias.

There was no opportunity to verify some information which were self-reported by respondents from their folders, because respondents who were nursing mothers did not carry their antenatal folders to the postnatal unit. Respondents in their eight month of pregnancy were included based on the assumption that, they should have taken the recommended three doses by the time of data collection for this study. However, it is likely that some of them may take subsequent doses after the study and their number of doses taken may be misclassified. To eliminate this misclassification, respondents who were pregnant and met the inclusion criteria should have started ANC in the first trimester to be recruited in study.

CHAPTER SIX

CONCLUSION

The uptake of at least three doses of SP in private facilities still remain low (46.6%), considering the fact that less than half of respondents had taken at least three doses. This is discouraging since the NMCP has a target of 55% for uptake of 3 or more doses.

Timing of first ANC visit was observed to have a strong positive association with the uptake of at least 3 doses (54.8%) for women who visited ANC in their first trimester, 43% for those whose first visit was in the second trimester and 2.2% for women who had their first visit in the third trimester.

The proportion of uptake of three or more doses was 27.9% for women who attended ANC less than 5 times and 72.1% for those who attended more than five times. Keeping of ANC schedules and regular attendance to ANC increases uptake of at least three doses.

The proportion of women who had taken at least three doses was 71.2% for women who received prior information on the drug from midwives and 28.8% for those who received no information. Emphasis on information on SP at the time of administration of drug can be said to increase drug uptake.

Knowledge level of midwives and ANC workers on IPTp-SP was generally low. None of the midwives interviewed could mention the need to withhold folic acid on the day of taking IPTp-SP since it reduces it efficacy as an antimalarial.

A majority of private hospitals do not practice DOT in the dispensing of SP. Some facilities were seen to administer SP at the pharmacy which made it impossible to

achieve effective documentation for appropriate reporting. This may have contributed to poor uptake recorded at reported by the NMCP for private facilities.

Health talks organized at ANC is generally concentrated on malaria without emphasizing on IPTp-SP, hence, perceptions that respondents have on SP affect their uptake. The proportion of women who had taken 3 or more doses was 67% for those who received health talk on malaria and 32.4% for those who verbalized that they did not receive any talk on malaria.

Program factors such as organization of workshops on IPTp-SP, monitoring, evaluation and supply of logistics are effectively managed to ensure maximum uptake of IPTp-SP. Hence, program factors do not act as barriers to the high uptake of IPTp-SP.

6.1 RECOMMENDATIONS

The National Malaria Control Program should reinforce the implementation of DOT for the administration of SP among private facilities.

The NMCP must increase awareness on IPTp-SP as a preventive strategy through the use of mass media.

The NMCP must also intensify the organization of frequent workshops on IPTp-SP for ANC nurses during which they will be trained on the WHO guidelines for administration.

Midwives and ANC nurses must always give detailed information on SP prior to administration to encourage the taking of subsequent doses.

Midwives and ANC workers must intensify the health education on IPTp-SP.

Further research must be done to compare the effectiveness of using the community distribution of IPTp-SP with ANC delivery. Community distribution is likely to increase coverage of IPTp-SP to women who report late to ANC and missed cases.

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APPENDICES

APPENDIX I: informed consent

Introduction

My name is Selina Amankwah and I am a graduate student from the School of Public health, University of Ghana, Legon, Accra. I am undertaking a research study on the topic **"Barriers to utilization of intermittent preventive treatment with sulfadoxine pyrimethamine in pregnancy at private hospitals in Tema metropolis"**. The purpose of the study is to identify factors affecting utilization of sulfadoxine pyrimethamine as a preventive measure for malaria in pregnancy.

This informed consent is to ensure that you understand the purpose and your responsibilities in the research before you decide if you want to be part or not.

Study procedure

This is a research study that would involve answering questions to an interviewer using a questionnaire for pregnant women and postnatal mothers and an in-depth interview with ANC nurses. The questionnaire interview will involve answering questions about experiences with SP drug, your background information and your knowledge about intermittent preventive treatment with Sulfadoxine pyrimethamine. The in-depth interview will involve asking detailed information about nurses' knowledge of SP, implementation of DOTS and will be fully recorded with an audio recorder. Data will be collected within a one month duration but the interview take a maximum of 15 minutes after your ANC section.

Voluntary participation

You have the right to participate in the study or to withdraw from the study at any time without any consequences to you. Should you choose to withdraw, the information you provide will not be used in the study. You are entitled to ask

questions at any point in the study for your clarification. Any aspect of the questions that is not well understood will be clarified by the interviewer

Risk and benefit

We do not for see any potential risk in participating in the study except that it will take part of your precious time and the need to provide to us some personal information of yours. Benefits in this study will be improvement in the administration and coverage of the intermittent preventive treatment with sulfadoxine pyrimethamine in pregnancy

Compensation

No payment will be made for your time; however, you will be remunerated with a bottle of water, a snack and a soft drink.

Confidentiality

We will protect all information you give us in this research to the best of our ability. We will not discuss your participation with anyone outside the research team. All responses will be treated as confidential as no names will be placed on the questionnaires. Audio recordings will be strictly kept under lock and key for storage.

This research has been reviewed and approved by Ghana Health Service Ethical Review Board. If you have any questions about this study, you may contact:

SelinaAmankwah (principal investigator): 0508457860

E-mail:samankwah009@st.edu.ug.gh

Hannah Frimpong (GHS-ERC Administrator): Mobile: 0243235225 or 0507041223

Email: Hannah.Frimpong@ghsmail.org

PARTICIPANT'S CONSENT FORM

I have read through the foregoing information/the foregoing information has been read and interpreted to me and I fully understand all that has been explained to me about the objectives, benefits, risks and my rights to withdraw from the study at any time without any consequences to me. I have been given opportunity to ask questions and have been answered satisfactorily. I therefore agree to participate in this study.

Please confirm your participation by signing below.

Signature/Thumbprint of participant

Date

.....

.....

P.I/Research Assistants name.....

Signature ..... Date.....

APPENDIX II: In-depth interview guide for ANC nurses

ID no.....Date .....

DEMOGRAPHIC INFORMATION1

1. Professional qualification

2. Number of years worked at ANC

3. **Knowledge on IPT-SP.**

a) Explore knowledge on WHO guidelines on administration.

b) Explore knowledge on side effects and contraindications in the administration of SP

c) How often are Patient educated on malaria and SP use in pregnancy?

d) Explore knowledge on malaria in pregnancy.

4. **Implementation of DOT**

Are there any challenges in administering SP under direct observation?

How effective is the documentation of SP uptake.

5. **Support from program implementers**

a) Supply of SP (adequate, shortages, timely)

b) Training programs on IPT-S

C) Monitoring and evaluation

6) **Report on number of SP uptake (how often, where etc)**

7. Barriers affecting uptake of IPTp-SP in the facility

APPENDIX III: Questionnaire for pregnant women and nursing mothers

UNIVERSITY OF GHANA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

This questionnaire is developed to identify barriers to utilization of intermittent preventive treatment (IPTp) with Sulfadoxine pyrimethamine in pregnancy at private facilities in Tema metropolis.

QUESTIONNAIRE FOR PREGNANT WOMEN AND POSTNATAL MOTHERS.				
FORM NUMBER:				
DATE OF INTERVIEW:				
CODE OF INTERVIEWER:				
SECTION A: SOCIO- DEMOGRAPHIC CHARACTERISTICS.				
Tick			**Code**	
1	AGE OF RESPONDENT (in completed years)	rage	.....	
2	MARITAL STATUS	mstat	0. Single	[ ]
			1. Married	[ ]
			2. Cohabitation	[ ]
3	LEVEL OF EDUCATION	edu	0. No formal Education	[ ]
			1. Basic	[ ]
			2. Secondary	[ ]
			3. Tertiary	[ ]
4(a)	OCCUPATION	rocc	0.Government/ Private Worker	[ ]
			1.Self-employed	[ ]
			2.Unemployed	[ ]
5	NUMBER OF LIVE CHILDREN	nkid	.....	....
6	DID YOU RECEIVE SP IN PREVIOUS PREGNANCY?	psp	0. Yes	[ ]
			1. No	[ ]

SECTION B: KNOWLEDGE OF MALARIA AND INTERMITTENT PREVENTIVE TREATMENT (IPTp).

7	HOW DO YOU KNOW IF SOMEBODY HAS MALARIA? **Give at least 3 signs and symptoms of malaria?**	kmal	0.yes 1. no	[ ] [ ]
8	HOW DO PEOPLE GET MALARIA TRANSMITTED?**could respondents say mosquito?**	ktrans	0.yes 1.no	[ ] [ ]
9	WHAT ARE THE EFFECTS OF MALARIA IN PREGNANCY ?			[ ]
(a)	MATERNAL ANEMIA	lhb	0.Yes	[ ]
			1.no	[ ]
(b)	STILL BIRTH	sbef	0.Yes	[ ]
			1.No	[ ]
(C)	MATERNAL DEATH	matdef	0.Yes	[ ]
			1.no	[ ]
(d)	LOW BIRTH WEIGHT OF BABY	lbwt	0.yes	[ ]
			1.no	[ ]
10	HAVE YOU HEARD OF INTERMITTENT PREVENTIVE THERAPY (IPT)	Ksp	0.yes 1.no	[ ]
11	IF YES WHAT DOES IT DO? **(could the respondent say it prevents malaria?)**	pksp	0.yes 1. no	[ ]
12	WHICH TRIMESTER IS THE FIRST SP DOSE TAKEN? **Could respondent say 16 weeks/4 months**	kspfd	0.yes 1.no	
13	AT LEAST HOW MANY DOSES OF SP DO YOU THINK YOU HAVE TO TAKE THROUGHOUT PREGNANCY? **Could respondent say 3 or more doses?**	dksp	0.yes 1.no	[ ]

ANTENATAL USE IN PREGNANCY

14	STAGE OF PREGNANCY AT WHICH FIRST ANC VISIT WAS MADE.	fanc		[ ]
15(a)	NUMBER OF VISITS MADE TO THE ANC DURING PREGNANCY?	nanc		[ ]
(b)	DID DELAY AT THE ANC INFLUENCE THE NUMBER OF SP YOU TOOK DURING PREGNANCY?	danc	0.Yes	[ ]
			1.No	[ ]
16	WAS TRANSPORTATION FARE A BARRIER TO	tanc	0.Yes	[ ]

	KEEPING YOUR APPOINTMENTS.			
			1.No	[ ]
17	DO ANC NURSES GIVE TALKS ON MALARIA AND IPT?	Meanc	0.Yes	[ ]
			1.No	[ ]

(A) UTILIZATION OF IPT AND DOT

18	NUMBER OF SP DOSES AT MONTHLY INTERVALS?	Utind		
19	DID YOU TAKE IT UNDER THE OBSERVATION OF A MIDWIFE?	Dot	0.	[ ]
			1.	[ ]
20	WERE YOU TOLD WHAT THE DRUG IS MEANT FOR BY THE MIDWIFE BEFORE TAKING?	utiinfo	0.Yes	[ ]
			1.No	[ ]
21(a)	DID YOU HAVE ANY UNPLEASANT EXPERIENCE OF SIDE EFFECTS WITH THE DRUG?	Utise	0.Yes	[ ]
			1.No	[ ]
(b)	IF YES PLEASE STATE SOME SIDE EFFECTS EXPERIENCED.	Utise2	....	
22	DO YOU LIKE TAKING THE DRUGS IN THE CLINIC?	Utipr	0.Yes	[ ]
			1.No	[ ]
23	IS THERE ANYTIME YOU DIDN'T TAKE THE DRUGS GIVEN TO YOU IN THE CLINIC?	utinpr	0.	[ ]
			1.	[ ]
24(a)	IS THERE ANYTIME YOU USED IPT DURING PREGNANCY AND STILL HAD MALARIA?	utimal	0.Yes	[ ]
			1.No	[ ]
25	IF YES, DID THE MALARIA INFECTION DISCOURAGE YOU FROM TAKING SUBSEQUENT DOSE?	Utimaldis	0.Yes 1.no	[ ] [ ]
26	WHAT DO YOU THINK ARE SOME OF THE BARRIERS TO HIGH UTILIZATION OF IPT USE IN THIS HOSPITAL	utisug	....	
27	DO YOU HAVE ANY RECOMMENDATION FOR THE ADMINISTRATION OF IPT DURING PREGNANCY	utirec	....	

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

My Ref. GHS/RDD/ERC/Admin/App/17/334
Your Ref. No.

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Selina Amankwah
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University of Ghana
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Legon

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation o your Study Protocol.

GHS-ERC Number	**GHS-ERC: 17/12/2016**
Project Title	"Barriers to Utilization of Intermittent Preventive Treatment with Sulphadoxine Pyrimthamine in Pregnancy at Private Facilities in Tema Metropolis"
Approval Date	14th March, 2017
Expiry Date	13th March, 2018
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally an seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and afte implementation

SELINA AMANKWAH

ID: 10274571

Response to comment on dissertation titled: **Barriers to utilization of intermittent preventive treatment with Sulfadoxine pyrimethamine in pregnancy at private facilities in Tema metropolis.**

Comments	Student's response to comments
Candidates' knowledge of relevant literature. *Relevant literatures were reviewed. The candidate however did not provide references for some of the statements. This must be addressed. The review of the literatures under factors affecting IPTp utilization in Ghana was not enough*	Comment well noted. Reference provided and additional literature added to the recommended section.
The candidates' interpretation of odd ratio was however problematic. She must go through the results section and interpret the odds ratios properly	Results section reviewed and odds ratio interpreted again.
She needs to indicate if she analyzed her qualitative results using a software.	Comment well noted. Information provided as recommended by examiner.no software was used, qualitative data was manually analyzed.
The candidate however did not provide references for some of the statements. Candidate needs to add some relevant literature.	References provided for statements as specified. Additional relevant literatures added as recommended in the examiners' report.