

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

COLLEGE OF HEALTH SCIENCES

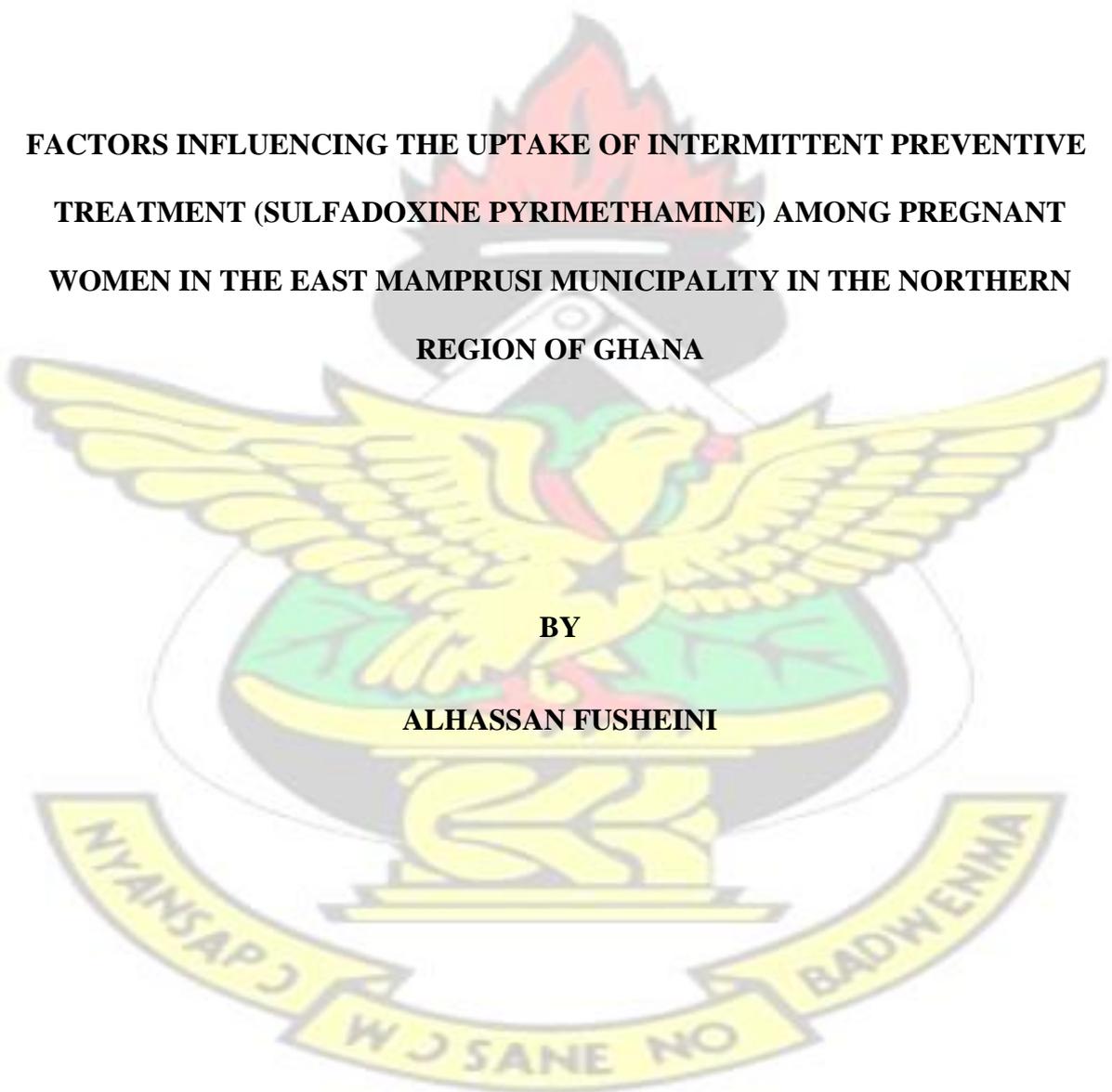
SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF HEALTH EDUCATION, PROMOTION AND DISABILITY

**FACTORS INFLUENCING THE UPTAKE OF INTERMITTENT PREVENTIVE
TREATMENT (SULFADOXINE PYRIMETHAMINE) AMONG PREGNANT
WOMEN IN THE EAST MAMPRUSI MUNICIPALITY IN THE NORTHERN
REGION OF GHANA**

BY

ALHASSAN FUSHEINI



NOVEMBER, 2019

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ALHASSAN FUSHEINI

(BSc. PUBLIC HEALTH)

**A THESIS SUBMITTED TO THE DEPARTMENT OF HEALTH EDUCATION,
PROMOTION AND DISABILITY, SCHOOL OF PUBLIC HEALTH, COLLEGE OF
HEALTH SCIENCES, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF MASTER OF PUBLIC HEALTH IN
HEALTH PROMOTION AND EDUCATION**

NOVEMBER, 2019

DECLARATION

I, FUSHEINI ALHASSAN declare that, after duly acknowledging other people's studies, this thesis: factors influencing the uptake of intermittent preventive treatment (sulfadoxine pyrimethamine) among pregnant women age (15-45 years) in the East Mamprusi Municipality has no materials published by another person apart from references. The study is non – interventional in nature and hence a cross sectional study.

The thesis submitted is my own work towards the award of the degree of Master of Public Health in Health Promotion and Education.

SIGNATURE..... DATE.....

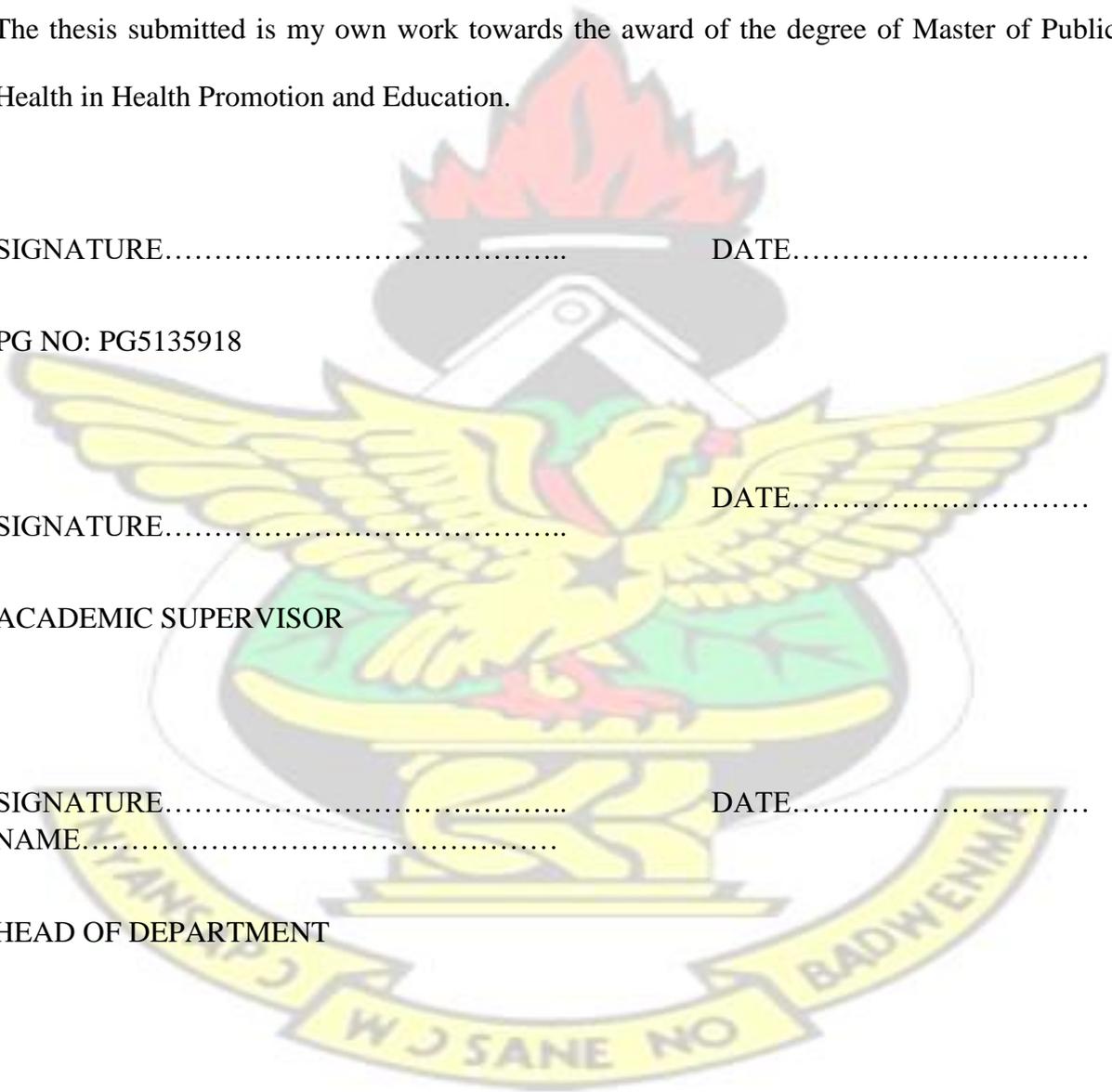
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NAME.....

HEAD OF DEPARTMENT



DEDICATION

This work is dedicated to Almighty God, my entire family, co-workers and friends for their support, and encouragement that motivated me throughout this academic exercise.

KNUST



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My heartfelt gratitude go to God the Almighty, for the abundant grace given to me throughout the period of study for the master's program.

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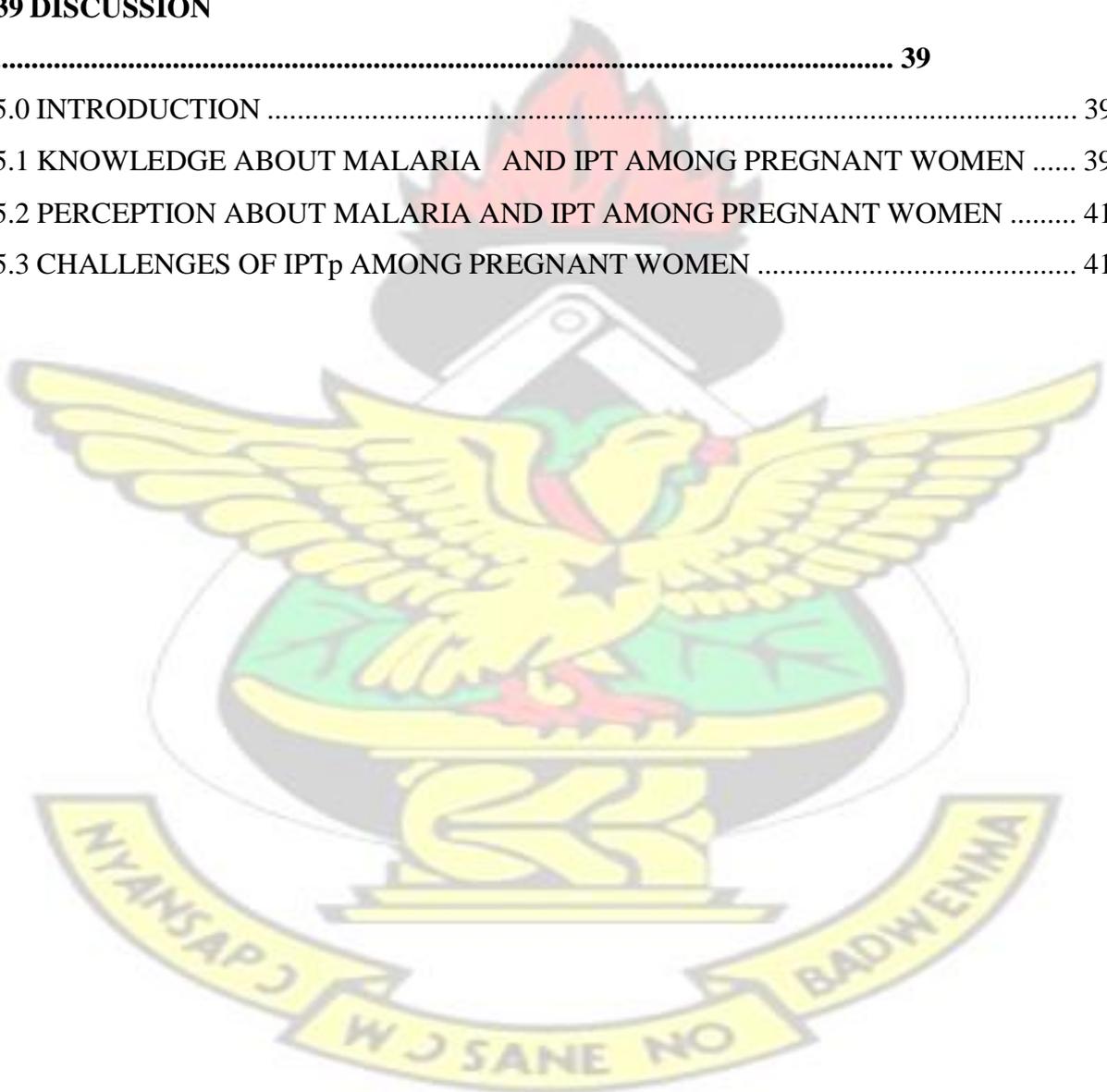
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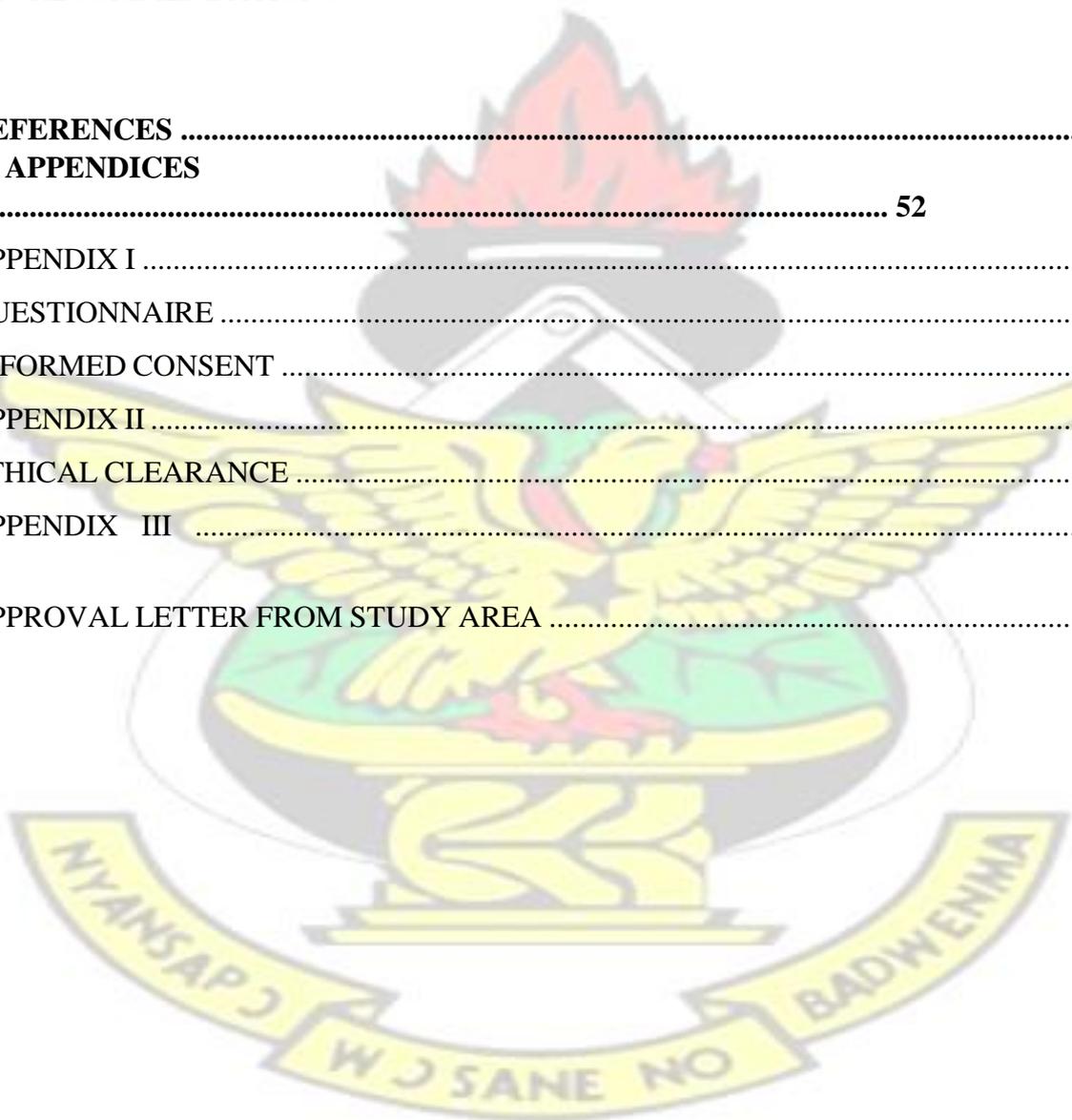
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LIST OF ABBREVIATIONS/ ACRONYMS



SP	-	Sulphadoxine pyrimethamine
LBW	-	Low Birth Weight
IPTP	-	Intermittent Preventive Treatment of malaria in pregnancy
IPT	-	Intermittent Preventive Treatment
EMM	-	East Mamprusi Municipality
ITN	-	Insecticides Treated Bed Net
WHO	-	World Health Organisation
ANC	-	Ante-Natal Care
SSA	-	Sub-Saharan Africa
OPD	-	Out Patient Department
MIP	-	Malaria in Pregnancy
KNUST	-	Kwame Nkrumah University of Science and Technology
MCH	-	Maternal and Child Health
DOT	-	Direct Observation Therapy
HBM	-	Health Belief Model
NGOs	-	Non-Governmental Organisations
LLIN	-	Long Lasting Impregnated Net
PMI	-	President`s Malaria Initiative
WIRA	-	Women in Reproductive Age
EMMHD	-	East Mamprusi Municipal Health Directorate
CHPS	-	Community Based Planning Health and Services
MOH	-	Ministry Of Health
MCH	-	Maternal and Child Health

ABSTRACT

Background: Malaria is an enormous public health problem affecting pregnant women, young children and adults, even though many awareness creation has been done on malaria in pregnancy but women in developing countries are still dying as a result of malaria in pregnancy and this necessitated for the research on factors influencing the uptake of intermittent preventive treatment (IPTp-SP) among pregnant women in East Mamprusi Municipal as it appears policy makers are not prioritizing malaria in pregnancy as a key condition that needs attention.

Objective: To assess the factors influencing the uptake of sulfadoxine-pyrimethamine among pregnant women in East Mamprusi Municipality.

Methods: Convenient sampling was employed in interacting with 310 pregnant women solely to solicit the views on IPTp uptake as the ultimate goal of the study.

Results: Approximately 90% of the respondents have heard about Intermittent Preventive Treatment (IPT-SP) and significantly 96.4% of respondents also received education on malaria in pregnancy. Moreover, 96.3% of respondents linked the transmission of malaria to mosquito bites. On the whole, about 50.8% of the pregnant women knew that failure to take SP during pregnancy can put the health of the mother and the unborn baby in danger. In addition to these, 63% of respondents perceived that taking of SP safeguards a pregnant woman from malaria as well as about 60% of respondents also suggested SP should be continued to be given to pregnant women in various clinics during Ante-natal care. About 46% of respondents mentioned that they were not able to take IPT at each visit as a result of stock out of SP within the Municipality.

Conclusion: Ninety –six percent agreed that Nurses give Health talk on malaria and almost same percent knew that malaria is transmitted by mosquito bites. However few barriers like weakness, Dizziness, Scent of SP and above all stock out of SP in the municipality were some of the issues respondents mentioned interfere in uptake of IPT. Therefore, the municipal health directorate should ensure regular supply of SP to health facilities within the East Mamprusi Municipality.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Malaria is an enormous public health problem affecting mainly young children, pregnant women and adults with little or no immunity (Ibrahim *et al.*, 2017). According to Kibusi *et al.* (2015), there were an estimated 207 million cases of malaria and an estimated 627,000 deaths in 2012. In that same year, malaria killed an estimated 482,000 children under five years of age. That is 1,300 children every day, or one child almost every minute. In 2013, 97 countries had ongoing malaria transmission. Ibrahim *et al.* (2017) did report that over 25 million pregnant women are at risk of the infection each year worldwide. Exavery *et al.* (2014), also disclosed that malaria in pregnancy (MIP), particularly in malaria-endemic settings results in adverse health outcomes for both woman and foetus. The susceptibility of pregnant women to *Plasmodium Falciparum* malaria increases the risk of disease and a high incidence of death for both the mother and her foetus (Sohail *et al.*, 2015).

According to Exavery *et al.* (2014), low birth weight (LBW), infant mortality, maternal anaemia, spontaneous abortion, and stillbirth are documented as devastating health consequences of *Plasmodium falciparum*. About 11% of neonatal mortality in malaria endemic African countries is attributable to LBW that results from Malaria in pregnancy. In sub-Saharan Africa, Malaria in pregnancy reportedly accounts for 26% of severe maternal anemia and up to 200,000 infant mortality annually due to low birth weight (LBW). Some 10,000 maternal deaths are recorded each year due to malaria-related anaemia.

Research has shown that intermittent preventive treatment during pregnancy (IPTp) with two doses of sulphadoxine-pyrimethamine (SP) protects pregnant women from maternal anaemia and malaria placental infection, and also reduces the incidence of low birth weight (LBW). Current evidence reveals further that exposure to IPTp with SP (IPTp-SP) and

insecticidetreated bed nets (ITNs) are associated with reductions in both neonatal mortality and low birth weight (LBW). Under trial conditions, IPTp-SP is acknowledged to be effective in reducing neonatal mortality. Recent evidence from Malawi reveals that IPTp-SP enhances birth outcomes.

Therefore, World Health Organization (WHO) recommends IPTp-SP for all pregnant women at each schedule of antenatal care (ANC), with the first dose administered as early as possible during the second trimester of gestation, and that the subsequent dose be given at least one month after the first. It is clarified further that the last dose can be administered up to the time of delivery, with no safety concerns (Tarimo, 2007; Exavery *et al.*, 2014; Mpogoro *et al.*, 2014).

SP is used for IPTp in many sub-Saharan African countries including Ghana. Several factors associated with incomplete coverage of IPTp have been reported in previous studies. These include lack of knowledge of adverse consequences of Malaria in pregnancy, late ANC initiation and multigravidity. Moreover, workforce shortage, poor skills of providers, inadequate or erratic drug supply, and skewed access to ANC services are also factors associated with incomplete coverage of IPTp (Mpogoro *et al.*, 2014).

1.2 PROBLEM STATEMENT

Malaria continues to pose a public health challenge in Ghana particularly in pregnant women (Ibrahim *et al.*, 2017). According to Mpogoro *et al.* (2014) malaria infection during pregnancy is associated with adverse outcomes in sub-Saharan Africa (SSA); in which Ghana is not an exception.

In sub-Saharan Africa, where malaria transmission is high and perennial, approximately 25 million pregnant women are at risk of *Plasmodium falciparum* infection every year, and at least 27.8% of pregnant women are reported to have evidence of peripheral/placental infection at the time of delivery. The consequences of malaria in pregnancy are grave for both mother and

fetus. In endemic countries, up to 26% of severe anemia in pregnancy is attributable to malaria, with malaria-related maternal deaths reaching up to 0.5% - 23% (Falade *et al.*, 2010).

Plasmodium falciparum malaria infection during pregnancy presents significant risks for the pregnant woman, the developing foetus and the new-born infant. The negative consequences associated with malaria in pregnancy include: severe malaria, severe anaemia, pre-term delivery, placental malaria and maternal death. Pre-term delivery and LBW are the risk factors for neonatal and infant deaths. Placental malaria is linked to intra-uterine growth restriction, stillbirth, and delivery of low birth weight (LBW) infants. In Africa where malaria is endemic, malaria-causing LBW kills between 62,000 and 363,000 new-born every year (World Health organization, 2011; Ghana Malaria Program, 2013; Mpogoro *et al.*, 2014).

In Ghana, malaria among pregnant women accounts for about 14% of Out Patient Department (OPD) attendance, 11% of admissions and 9% of deaths of which East Mamprusi is not an exception (Ibrahim *et al.*, 2017).

1.3 CONCEPTUAL FRAMEWORK

The conceptual framework for this study explains the various determinants underpinning the uptake of intermittent preventive treatment (IPT) by pregnant women. The framework partially dwells on the Andersen Health care utilization model as well as the Health belief model.

The Andersen Health care utilization model associates the use of health services by people to three factors namely predisposing factors, enabling factors and need factors. According to Andersen model, the predisposing factors hinges on socio-cultural characteristics of individual. Moreover, enabling factors are concerned with the logical aspects of obtaining care whereas the need factors also concern the immediate cause of healthcare use (Andersen, 1995).

The Health belief model also outlines health behaviour is determined by perception about a disease or a health condition and the strategies available to minimize its occurrence.

Specifically, the model outlines the following constructs as underpinning health behaviour viz. perceived severity, perceived susceptibility, perceived barriers and benefits, self-efficacy and cues to action (Glanz *et al.*, 2002).

The use of IPT by pregnant women is dependent on several factors including sociodemographic characteristics such as age, religion, level of education etc., access to health facility, cognizant about the benefits of IPT, regular attendance of ANC, perception about the susceptibility to and risk/ severity of malaria infection, perception about the barriers/challenges to IPT uptake among others. Therefore, in line with this current study the author coined a framework out of the two aforementioned models to support the study. This framework is depicted in Figure 1.1 below.

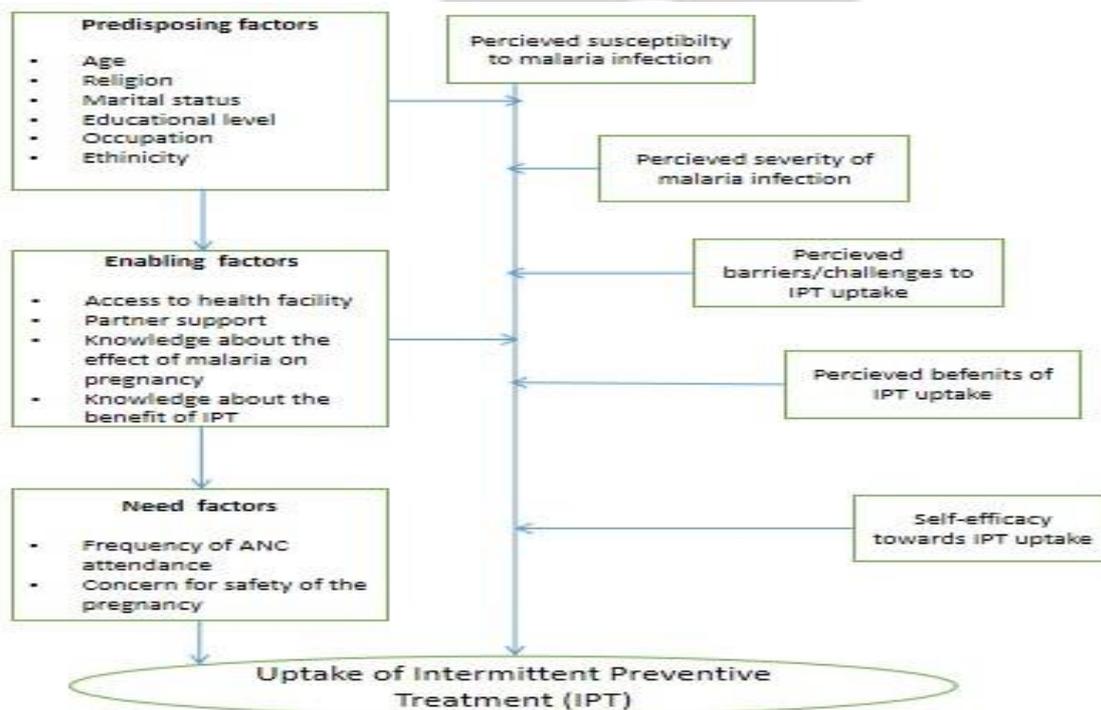


Figure 1.1: Conceptual framework adapted from Andersen Health care utilization model and HBM. (Author's constructs, 2019)

Figure 1.1 Conceptual Framework

1.4 RESEARCH QUESTIONS

The reason for which this study is being carried out is to address the following questions;

1. What is the level of knowledge in pregnant women about sulfadoxin-pyrimethamine in East Mamprusi Municipality?

2. What are the challenges of sulfadoxine-pyrimethamine in East Mamprusi Municipality?
3. What are the perceptions of pregnant women on sulfadoxine-pyrimethamine in East Mamprusi Municipality?

1.5 GENERAL OBJECTIVE OF THE STUDY

The study is to assess the factors influencing the uptake of sulfadoxine-pyrimethamine among pregnant women in East Mamprusi Municipality.

1.6 SPECIFIC OBJECTIVES

1. To assess the knowledge of pregnant women on malaria prevention in pregnancy using sulfadoxine-pyrimethamine in the East Mamprusi Municipality.
2. To assess the challenges of sulfadoxine-pyrimethamine uptake in East Mamprusi Municipality.
3. To assess the perception of pregnant women on sulfadoxine-pyrimethamine in East Mamprusi Municipality.

1.7 SIGNIFICANCE OF THE STUDY

Over the last decade a body of evidence has accumulated which supports the use of both IPTp-SP and ITNs to reduce the adverse effects of malaria during pregnancy (Naganda *et al.*, 2004). Coverage targets set for malaria in pregnancy interventions have commonly not been met and challenges are yet to be overcome to ensure their effectiveness (Pell *et al.*, 2011).

According to Ibrahim *et al.* (2017), Ghana adopted intermittent preventive treatment of malaria in pregnancy policy using sulphadoxine pyrimethamine. Notwithstanding its implementation, its coverage still remains low. This study therefore, sought to investigate factors that influence the uptake of intermittent preventive treatment of malaria in pregnancy in the East Mamprusi Municipality.

The attainment of reversing this incident of malaria in pregnancy is to ensure that all pregnant women aged of 16⁺ weeks takes sp in order to prevent them from malaria. The outcome of this project will fill in the knowledge-gap on the factors instigating the uptake of sulfadoxinepyrimethamine in East Mamprusi Municipality. It will also lead to the development of priorities for further research.

1.8 SCOPE OF THE STUDY

The study focused on the knowledge, perception, challenges and coverage of IPT among pregnant women age 15-45 years. The emphasis will be on those who take SP during antenatal clinics.

1.9 HYPOTHESIS

- H_A : Knowledge, perception, and challenges of IPT uptake significantly influence the uptake of IPT among pregnant women age 15-45 years
- H_0 : Knowledge, perception, and challenges of IPT uptake do not significantly influence the uptake of IPT among pregnant women age 15-45 years

1.10 ORGANIZATIONS OF THE CHAPTERS

The study will be presented in six chapters; chapter one contains introduction of the study, chapter two constitute literature review while chapter three covers the research methodology. The findings of the research and discussion of results will be detailed in chapter four and five. Finally, chapter six covers conclusion and recommendations of the study.

CHAPTER TWO

LITERETURE REVIEW

2.0 INTRODUCTION

This chapter presents on the available literature that corresponds with the specific objective of the study. The sub-section discussed include level of knowledge of pregnant women on malaria prevention using IPTp, perception of IPTp uptake by pregnant women as well as the challenges associated with intake of sulphadoxine pramylamine.

2.1 MALARIA PREVENTION IN PREGNANCY

Malaria in pregnancy (MiP) is a major global health issue. This phenomenon results in untoward birth outcomes and poor maternal health (Pell *et al.*, 2011). According to Licour *et al.* (2010), over 125 million pregnancies occurred in areas of malaria transmission, globally, in 2007. The mortality and morbidity associated with malaria during pregnancy is extremely prevalent in endemic regions of sub-Saharan Africa including Ghana. In pursuit to curtail the menace of malaria, many countries in Africa adopted the policy of using SP as IPTp of which Ghana is not an exception. Such a move was preceded by a recommendation made by the WHO which stated that pregnant women in malaria endemic areas are to take at least two doses of SP as IPT (Ntirushwa, 2004).

In Ghana, every pregnant woman must have access to insecticide treated nets (ITNs) in addition to IPTp-SP which should be used in the process of the pregnancy as an additional method of malaria prevention. As part of attaining this target Ghana changed its policy on malaria prophylaxis during pregnancy. This requires pregnant women to receive SP as IPT under DOT (Ministry of Health, Revised Anti-malaria Drug Policy for Ghana, 2009).

According to the WHO, Malaria Policy Advisory Committee and Secretariat (2012), administration of SP is recommended as early as possible in the second trimester at a regular interval of at least one month. The timing and interval for IPTp uptake is important. This is due to the fact that during the first trimester of pregnancy, fetal growth is quite slow but increases quickly in the second and third trimesters. The presence of parasites in the placenta interferes

with the transfer of nutrients to the fetus. Therefore, it is imperative to ensure that the placenta is free of malaria parasites when fetal growth is increasing with respect to the weeks.

2.2 LEVEL OF KNOWLEDGE OF PREGNANT WOMEN ON MALARIA

PREVENTION USING IPTP

The level of knowledge that a pregnant woman has about IPTp will inform her on whether to regularly attend the ANC to receive SP or not and this will affect the uptake of IPTp. Their best and most practicable source of this knowledge is at the ANC where health workers are supposed to educate them. In a study to identify client-related, health worker related and health-related factors that affect adherence to IPT in Kampala, only 21% of the pregnant women interviewed had been told about the use of drugs to prevent malaria, 31.5% knew the recommended drug used in prevention of malaria in pregnancy and only 4.5% knew the recommended doses of SP to be taken. Over 95% of the pregnant women reported no health education was given to them at the ANC concerning IPT. It is no wonder that it was found out that the coverage of IPT1 and IPT2 as at 2008 stands at 61% and 31.5% respectively (Nankwanga and Gorette, 2008).

Health education at the ANCs concerning IPTp is a must if the level of knowledge of pregnant women about IPTp is to increase to appreciable levels and thus help improve upon its uptake. An interesting phenomenon was realized in Tanzania by Nganda *et al.*, 2004, where knowledge of malaria by pregnant women was found to influence the use of ITNs but not IPTp. It was realized that attendance at health education sessions at the MCH clinic was the only determining factor for IPTp-SP use. In Uganda, a study conducted in 2008 found that the level of knowledge about IPTp was very low, with only 19% of the 240 participants demonstrating a high knowledge about the intervention. Of this lot, up to 82% cited Fansidar as one of the medicines used for IPTp, while 56% correctly stated the recommended dose of three tablets per visit (Mpungu and Mufubenga, 2007). These studies confirm that knowledge about IPTp

remains low among pregnant women in the SSA, a situation that ties to late and inconsistent attendance of ANC facilities (Ouma *et al.*, 2007; Nganda *et al.*, 2004; Enato *et al.*, 2007).

Health education sessions is therefore curcial at the clinics for the pregnant women. The education should be intensified, and pregnant women encouraged to attend these sessions. There should also be innovative ways of repeating the health education topics during the whole period of the ANC so that everyone who attends gets to hear the messages no matter the time of their attending the clinic. The level of knowledge of the effects that malaria can have on the mother and baby was found to be poor in a group of pregnant women who attended ANC at two health facilities in the Edo State of Nigeria. This will definitely inform their choice of adhering to IPTp. If malaria is perceived as a common health problem by pregnant women, their practice of IPTp would also be poor (Enato *et al.*, 2007).

The knowledge of the timing for IPTp by the pregnant woman also influences her decision to patronize the ANC and receive SP. In East Africa, 90.1% of the women interviewed in a study were aware that SP was the drug for IPT and 77.2% held the perception that IPT with SP has health benefits; however, 70.0% were not aware of the timing for IPT. This caused incomplete administration of SP (Tarimo, 2007).

2.3 PERCEPTION OF IPTP UPTAKE BY PREGNANT WOMEN

The study adopts the health believe model of behavior change communication to explore the perceptions of pregnant women as depicted below:

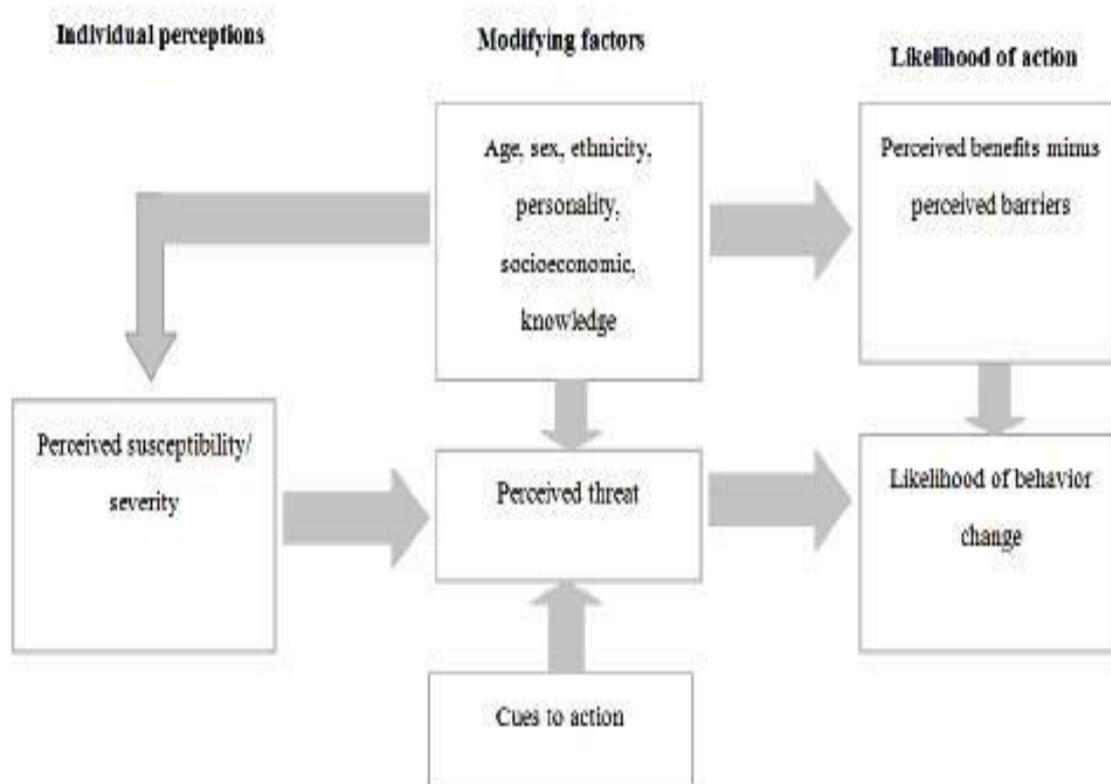


Figure 2.1 The Health Belief Model

(Source: Glanz *et al.*, 2002)

The Health Belief Model (HBM) holds that perceptions about a disease and strategies available to minimize its occurrence determine health behavior (Hochbaum, G.M. , 1958). The original HBM consisted of four constructs, namely: perceived severity, perceived susceptibility, perceived benefits, and perceived barriers. However, HBM scholars later improved model's accuracy by including three new constructs, namely, cues to action, modifying factors, and self-efficacy (Glanz *et al.*, 2002).

Perceived severity signifies an individual's belief about the severity of a disease. While the perception of severity arises from medical information, or knowledge, it may also come from beliefs a person holds about the difficulties a disease would create in his or her life (McCormick-Brown, 2013). For instance, an individual may view that flu is less serious than malaria infection, because, while flu would require a few days to clear, malaria requires a longer

period and finances to treat. Hence, one is likely to change behaviour faster when facing the risk of malaria than flu.

Perceived susceptibility is one of the powerful perceptions influencing the adoption of prescribed health behaviours. The greater the perceived risk of infection, the higher the chance of behaviour change. For instance, perceived susceptibility is what drives pregnant women to use Long Lasting Impregnated Nets (LLINs) to decrease their susceptibility to malaria infection. When people perceive that they are at risk of infection, they are likely to prevent it from happening by adopting prescribed measures. However, when people believe that they are not at risk, the adoption of preventive behaviours remains low (Belcher *et al*, 2005). A study conducted by Mufubenga and Kiwuwa 2004, reported that older women and women with higher parities were complacent and confident that they were not at risk of malaria infection due to their maternal experience, which in turn, constrained the IPTp uptake.

Perceived benefits refer to an individual's opinion about the usefulness of a new behaviour in decreasing the risk of contracting an infection. People tend to adopt healthier behaviours when they believe that such new behaviours will decrease their chances of developing a disease. Perceived benefits play an important role in the adoption of preventive behaviours, such as consistent use of LLINs, or regular visits to antenatal (ANC) clinics for IPTp. To start ANC visits early enough, a pregnant woman needs to believe that the benefits of such visits outweigh the consequences of non-visitation. A study conducted in Mubende Municipality, Uganda indicated that a good number of participants considered IPTp a useful intervention for malaria prevention during pregnancy (Mufubenga and Kiwuwa, 2004). Another study found that most respondents perceived IPTp to be useful in malaria prevention and recommended that it should go hand in hand with the distribution of ITNs (Mangeni, n.d).

Perceived barriers refer to an individual's evaluation of obstacles to the adoption of new health behaviours. Of all the constructs constituting the HBM, perceived barriers are the most critical

determinant of health behaviour change (Janz and Becker, 1984). It is no wonder that many empirical investigations on IPTp uptake have concentrated most on the role of perceived barriers. For instance, a study conducted in Kenya found that perceived barriers such as the high risk of miscarriage and skin reaction discouraged the IPTp uptake (Guyatt *et al.*, 2004). Earlier, SP drugs had been associated with effects such as Stevens-Johnson syndrome in people who are allergic to „sulfa“ with possible dramatic and potentially fatal effects (Phillip-Howard *et al.*, 2003). Another study concluded that people’s perceptions about a drug might significantly determine their acceptance of that drug. In this regard, consumers in some cultural contexts are less likely to comply with a drug that they perceive to be bitter, or a potential risk for issues such as abortion (Ribera *et al.*, 2007). However, such perceptions thrive due to inadequacy of correct information. The situation is worse when health service providers share such sentiments and hence, are unable to provide correct information about the drug (Mubyazi *et al.*, 2005). In Uganda, a study conducted in Mukono Municipality found that pregnant women believed that SP drugs were very strong and likely to weaken pregnant women, cause miscarriage, or abnormalities; thus, making women to stay away from antimalarial drugs during pregnancy (Mbonye *et al.*, 2006). Another study conducted in Tanzania found that 74% of pregnant women believed that SP drugs taken during pregnancy could be harmful to women and their unborn babies (Mubyazi *et al.*, 2005). Women are generally reluctant to take medicines during pregnancy unless necessary due to misgivings about potential effects on fetuses. A study conducted in the rural southwest Nigeria found that out of the 209 respondents, about one-third (33%) said they were afraid to take medicines during pregnancy. In this regard, about 44% of those who had used IPTp during the index pregnancy expressed concern about possible adverse effect of SP on their pregnancies (Akinleye *et al.*, 2009). The quality of services at ANC facilities also emerges as a barrier to the IPTp uptake. For instance, a study conducted in Uganda found that inconsistent supply of clean drinking water and sharing of drinking cups were some of the barriers influencing IPTp uptake (Nankwanga and Gorette,

2008). Notably, some women refused to take SP drugs under the observation of providers due to inadequacy of water cups, which necessitated sharing. Another study conducted in Nigeria noted that not all ANC clients were comfortable sharing cups when taking drugs under the Direct Observation Therapy (DOT). Consequently, up to 63% of the pregnant women opted to carry home their tablets. However, about 60% would have liked to take their drugs at the clinic if allowed to bring along their own drinking cups, further suggesting that women were uncomfortable sharing drinking cups (Akinleye *et al.*, 2009).

Under the DOT strategy, it is easier to record and monitor the doses and the timing of doses, which is critical for success of the IPTp intervention. Furthermore, the effectiveness of the DOT strategy necessitates a consistent supply of clean drinking water and adequate provision of drinking cups. Without clean drinking water and cups, providers have no option but to allow women to carry the tablets home, which complicates monitoring and reporting of IPTp coverage (Ashwood-Smith *et al.*, 2002; Mubyazi *et al.*, 2005). In contexts where communities perceive SP drugs to be too strong for pregnant women, the uptake is constrained by the perception that they cannot take a strong drug in an empty stomach. In Uganda, for instance, pregnant women did not take their SP tablets under DOT due to the perception that the drug was too strong for an empty stomach (Mubyazi *et al.*, 2005). Similarly, a study conducted in Tanzania reported that up to 40% of those receiving SP drugs did not swallow the tablets at the clinic due to hunger and disgust of sharing water cups (Tarimo, 2007). The attitude adopted by health providers is another form of perceived barriers to the IPTp uptake. In this regard, unfriendly approaches, mishandling, and arrogance towards pregnant women are some of the attitudinal elements discouraging subsequent ANC visits for SP and other services (Hill and Kazembe, 2006). Other forms of barriers to IPTp uptake include prolonged waiting time and lack of diagnostic facilities (Mboera *et al.*, 2007).

Modifying variables such as gender, age, religion, marital status, parity, gravidity, education level, occupation, income, and knowledge about IPTp also influence health behaviour change (Ali, 2002). Within the context of this study, these attributes influence women's perceptions about the seriousness of malaria during pregnancy, susceptibility to malaria infection, benefits of IPTp and barriers to IPTp uptake. Among the modifying variables, women's knowledge about IPTp has attracted most studies. For instance, studies conducted in Tanzania and Uganda, reported significant linkage between women's knowledge of the recommended drugs, dosage, dosage interval and the timing of ANC visits (Mubyazi *et al.*, 2005; Tarimo, 2008). In Uganda, a study found that only 21% of participants had received information about IPTp, of which only 31.5% knew the recommended drugs and only 4.5% knew the recommended dose (Nankwanga and Gorette, 2008). In Nigeria, a study found that although more than one-half of pregnant women had ever heard about IPTp, only 23.9% of this lot was able to provide a correct definition. About two-thirds of those that had heard of IPTp knew that SP was the recommended drug, while 67% of those who mentioned SP demonstrated knowledge of the correct dosage (Akinleye *et al.*, 2009).

Cues to action, including events, or people may move an individual to change behaviour.

Examples include illness of a family member, partner's opinion about antenatal care, peer influence, or health warnings in the World associated with non-conformity (Ali, 2002).

Self-efficacy refers to one's own belief about the ability to do something (Bandura, 1997). If someone believes that a new behaviour is useful, but does not think he or she is capable of doing it, chances are high that such new behaviours may not be tried. For instance, if a pregnant woman believes that SP drugs may harm her foetus, then the IPTp uptake as a new behaviour for reducing susceptibility to malaria infection may be constrained.

2.4 CHALLENGES OF SULPHADOXINE PRAMYTHAMINE

The PMI survey conducted in 2008 in Ghana showed that IPTp is offered in 94.1% of facilities, however SP stock outs had occurred in 27% of health facilities in the previous six months. These stock outs were believed to be likely related to challenges in supply chain management programs rather than a drug shortage at the central warehouses. SP stock outs pose a serious barrier to the successful implementation of IPTp in any country. The coverage of IPTp is reduced in the face of drug stock outs as evidenced by a study conducted in Tanzania where 40% of women interviewed had not received SP because of SP unavailability (Tarimo, 2007).

Inconsistency in the supply of clean and safe drinking water for the administration of the SP is another factor that affects the practice of DOT. Health workers' compliance with the direct observed therapy in administering SP for IPTp becomes questionable in the face of shortage of clean water and cups at ANC clinics (Mubyazi et al, 2005). Thus IPTp coverage declines when there is no water in the ANC's for the pregnant women to swallow SP under DOT.

Training of health care workers periodically on IPTp may help to equip them with the necessary knowledge and skills needed for the implementation of the program. It may also remind them of the importance of IPTp as well as help to refresh their minds on the policy which stresses on the timing of the administration of SP. It may also motivate the workers to implement IPTp thus helping to improve the overall coverage of the programme. Nonetheless, there is lack of training and retraining of these health personnel on the proper administration of IPTp thereby hindering the implementation of the programme.

The successful implementation of the IPTp strategy depends on the proper planning, and support to the training of the health staff. A study done in rural western Kenya to assess the effect of health care worker training on the use of IPT for malaria in pregnancy, by (Ouma *et al.*, 2007) showed an increase in coverage from 19% in 2002 to 61% in 2005 for IPT1 and from

7% to 17% for IPT2 after health care workers were retrained on IPTp in 2003. In Uganda, IPT for prevention of malaria in pregnancy coverage one and two was found to be low standing at 61% and 38% respectively. A survey conducted in three health centres in Kampala showed that guidelines on malaria in pregnancy were not referred to and only 1.6% of health workers were trained in the last six months (Nankwanga and Gorette, 2008).

Another challenge facing the successful implementation of IPTp is partly due to staff attitude. Results from investigations on a smaller-scale in sub-Saharan Africa have indicated a combination of factors including health worker behaviour as possible explanations for low recorded coverage of IPTp. Poor health worker practices have been identified among others as operational challenges in delivering IPTp (Hill and Kazembe, 2006).

Whilst countries in Africa may have made important progress with IPTp implementation, coverage levels are reported to be still low. High antenatal clinic (ANC) attendance alone is not sufficient to ensure high IPTp coverage (Hill and Kazembe, 2006). A study conducted in the Luwero municipality of rural Uganda showed a 94.4% attendance of ANC among postpartum women during their most recent pregnancy however only 71.7% had taken at least one dose of SP. 35.8% received two or more doses (Mpungu and Mufubenga, 2007). Similarly, a community-based study in rural Malawi reported 75.7% receiving one dose and 43.7% receiving two or more doses (Holtz *et al*, 2004). In central Mozambique, Brentlinger *et al*. (2007), reported that 92.5 % of women interviewed received at least one dose of SP. 22.1% received 1 dose, 30.4% received 2 doses, and 43.6% received 3 doses. Another study conducted in Tanzania showed that there had been an increase in coverage of women taking two doses of IPTp from 29% to 65% between 2001 and 2007 (Mubyazi *et al*, 2008). This is higher than the figure for Bosomtwe in 2007 which was 58.8%. This achievement in Tanzania was acknowledged, however, amidst several challenges including; confusion of health workers as to adherence to the national antenatal care guidelines emphasizing two IPTp doses during a

woman's pregnancy or the recommendation by other agencies operating at municipality level of three doses; Delay of the printing and distribution of focused ANC guidelines to the municipalities; constraints related to women's late booking, understaffing, inadequate skills of most health workers and their poor motivation. Other problems that were identified in this study were unreliable supply of free SP at private clinics and clean and safe water shortage at many government ANC clinics limiting direct observation treatment. Finally, the study also showed that supervision of peripheral health facilities had been inadequate. IPTp coverage was generally low partly because IPTp was not systematically enforced like programmes on immunization, tuberculosis, leprosy and other infectious diseases. In Ghana however, policy guidelines are clear requiring that all pregnant women receive three doses of IPTp and the IPTp program has been systematically introduced into the ANC programme so other factors may rather need to be investigated.

Administering SP under direct observation by health workers is a way of ensuring that SP is taken by the pregnant woman. Once this event is recorded, it serves a means of monitoring the number of doses and the timing of the administration of SP which are all important in IPTp. Knowledge of health workers on the importance of IPT may not always translate into practice. In Uganda, IPT for prevention of Malaria in pregnancy, coverage one and two are still low standing at 61% and 38% respectively. A study done by (Mubyazi *et al.*, 2005) revealed that only 34.4% of pregnant women studied took SP under observation by a health worker. Health workers knew the importance of IPT but practice as directly observed therapy was poor. Some pregnant women testified that sometimes ANC staff allowed them to swallow SP tablets at home. Health worker's compliance to DOT in the facilities may be questionable especially if there is the lack of commitment to do so.

Personal preferences by the pregnant women may also affect the practice of DOT. In Tanzania, a study conducted by Tarimo in 2007 showed that about a third (40.0%) of those receiving SP at the ANC did not swallow the tablets at the clinic because of empty stomachs and sharing of

water cups. Since the WHO recommends that SP should be taken by DOT, there is the need for all pregnant women to take SP at the antenatal clinic before leaving.

Therefore, taking them without supervision does not count.

KNUST



CHAPTER THREE

METHODOLOGY

The chapter presents the study background upon which this study was based. This chapter explains the research design, study population, sampling procedure and sample size, and development and pre-testing of the instrument.

3.1 STUDY AREA

3.1.1 BACKGROUND OF STUDY AREA

The East Mamprusi Municipality is one of the 26 Municipalities of the Northern Region of Ghana, which is in the Guinea Savannah Zone. Gambaga is the capital of the East Mamprusi Municipality and it lies north-east of Tamale the regional capital. The Municipality has a land area of about 1,560 sqkm, which is about 2.2% of the total land area of the Northern Region. The current population of the Municipality according to the 2000 population and housing census is 140,398 with 51% of the population being females. The average population density is 59 persons per sq km. there are 142 communities in the Municipality with 8,656 houses, 11,281 households and the average household size being 3.7.

3.1.2 CLIMATIC AND ECOLOGICAL CONDITIONS

The municipality is characterized by uni-modal rainfall pattern usually from April to October with a mean rainfall of 1560mm and a minimum of 670mm. Maximum temperatures averaging 42°C are recorded in March and April. Temperature in wet seasons range from 20°C to 35°C. vegetation is mostly grassland with Shea trees and teak trees interspersed in the grass vegetation typical of Guinea Savannah Zone.

3.1.3 SOCIO-ECONOMIC ACTIVITIES

The people of EMM are well noted for their farming occupation. Crops normally cultivated in the area include yam, sorghum, millet, groundnut, maize, rice among others. The animals reared in this area include sheep, goats, and poultry among others under extensive system.

Some economic activities in Gambaga include shear butter extraction, dawadawa production, cotton spinning, cutting down trees for fire wood etc.

3.1.4 HEALTH FACILITIES

The East Mamprusi Municipality have twelve (12) functional health facilities that render health services to people in and around the municipality, among the facilities include Municipal Hospital (1), Four (4) Health Centres and Seven (7) CHPS compound.

3.2 STUDY DESIGN AND TYPE

The study adopted a cross sectional survey study design. A cross-sectional study survey is where exposures and outcomes are observed or measured simultaneously in a population. The researcher collected data across the study population within a specific time frame. The data was quantitative in nature. The study was descriptive study type. The study operated within a precise time frame with the intention of describing the situation as it is in the municipality at the time of the study resorting to inferring of any causal relations.

3.3 STUDY POPULATION

The study focused on all pregnant women age 15 to 45 years who resided in the municipality at the time of study. Population in this study was the entire set of individuals who met the sampling criteria. The research considered them as the target population for the study.

3.4 SAMPLE SIZE DETERMINATION

The Cochran's formula for sample size determination was used to compute the study's sample size (Cochran, 1977). The Cochran's formula for determining sample size is given as;

$$n_0 = \frac{Z^2 pq}{e^2}$$

Which is valid where n_0 is the sample size,

Z^2 is the abscissa of the normal curve that cuts off an area α at the tails ($1 - \alpha$ equals the desired confidence level, e.g., 95%), e is the desired level of precision, p is the estimated proportion of an attribute that is present in the population, and q is $1-p$.

According to the Ghana Health Service Household Registration in 2019, the total number of population in the East Mamprusi Municipality is 150,018. Out of this number the number of Women in their Reproductive age (WIRA) constitute 36,004 (24%) (East Mamprusi Municipal Health Directorate, 2019). Therefore, using a 95% confidence interval with an estimated 24% WIRA and a 5% level of precision, the required sample size was

$$\begin{aligned} n_0 &= \frac{(1.96)^2 * (0.24)(1-0.24)}{(0.05)^2} \\ &= 280 \end{aligned}$$

Making provision for 10% non-response, 10% of 280 = 28

Therefore, the total number of participants recruited for the study

$$\begin{aligned} &= 280 + 28 \\ &= 308 \end{aligned}$$

3.5 INCLUSION AND EXCLUSION CRITERIA

The study included pregnant women aged 15 to 45 years, who had gestated for at least 4+ months (16 weeks) and consented to participate in the study voluntarily. World Health Organization (WHO) recommends that pregnant women should access IPTp within the 16th

week of pregnancy. However, the study excluded women who had received treatment for malaria during the pregnancy.

3.6 SAMPLING METHOD

The research employed the convenient sampling method as interacting with pregnant women solely to solicit the views on IPTp uptake as the ultimate goal of the study.

3.7 SAMPLE SELECTION

The sampling technique employed was convenient sampling. The study area was zoned into five clusters namely, Nalerigu sub-municipality, Gambaga sub-municipality, Langbinsi submunicipality, Sakogu sub-municipality and Gbintiri sub-municipality. Convenient sampling was used to select pregnant women age 16 weeks and above to conduct the study at the facility level in the various sub-municipalities.

In order ensure that the 308-sample size was representative of the population, proportional allocation of samples was considered, using a sample fraction of 0.0085546. Samples selected from these clusters were summed and rounded up to 310.

$$\text{Sample fraction} = \frac{\text{Sample size}}{\text{WIRA}} = \frac{310}{36004} = 0.0085546$$

Samples from a cluster = WIRA of cluster X sample fraction

3.8 WIRA PER CLUSTER AND SAMPLE SIZE PER CLUSTER

Cluster	WIRA	Sample size
Nalerigu	10441	90
Gambaga	5761	50
Langbinsi	9001	77
Sakogu	6841	59
Gbintri	3960	34

Total	36004	310
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3.9 DATA COLLECTION TOOLS

Questionnaire administration was the main data collection tool used in the study, semi structured questionnaire was administered among respondents.

3.10 PRE-TESTING

The questionnaire was pre-tested in Nalerigu sub-municipality which had similar characteristics with the study population and the necessary corrections was made before the actual administration.

3.11 TOOLS FOR DATA ANALYSIS

For the primary analysis of the data sources, the questionnaires collected were batched, edited and coded, and entered, cleaned and analysed using STATA. All the data were grouped into data files based on an analysis unit. Frequencies, percentages and means were used for descriptive analysis of the variables. A chi-square analysis was conducted to ascertain the association between “health education on malaria and respondents” knowledge about malaria and IPT was done; the researcher used the following (*mode of transmission of malaria, maternal anaemia, stillbirth, maternal death, low birth weight of baby, ever head of IPT, who qualified for IPT, recommended period for IPT dose and respondents’ opinion about the use of IPT*) as factors in determining the knowledge of the respondents on malaria. Moreover, association between barriers affecting IPT uptake and number of ANC visit was established using chi-square with significance level set at $p < 0.05$.

3.12 ETHICAL CONSIDERATION

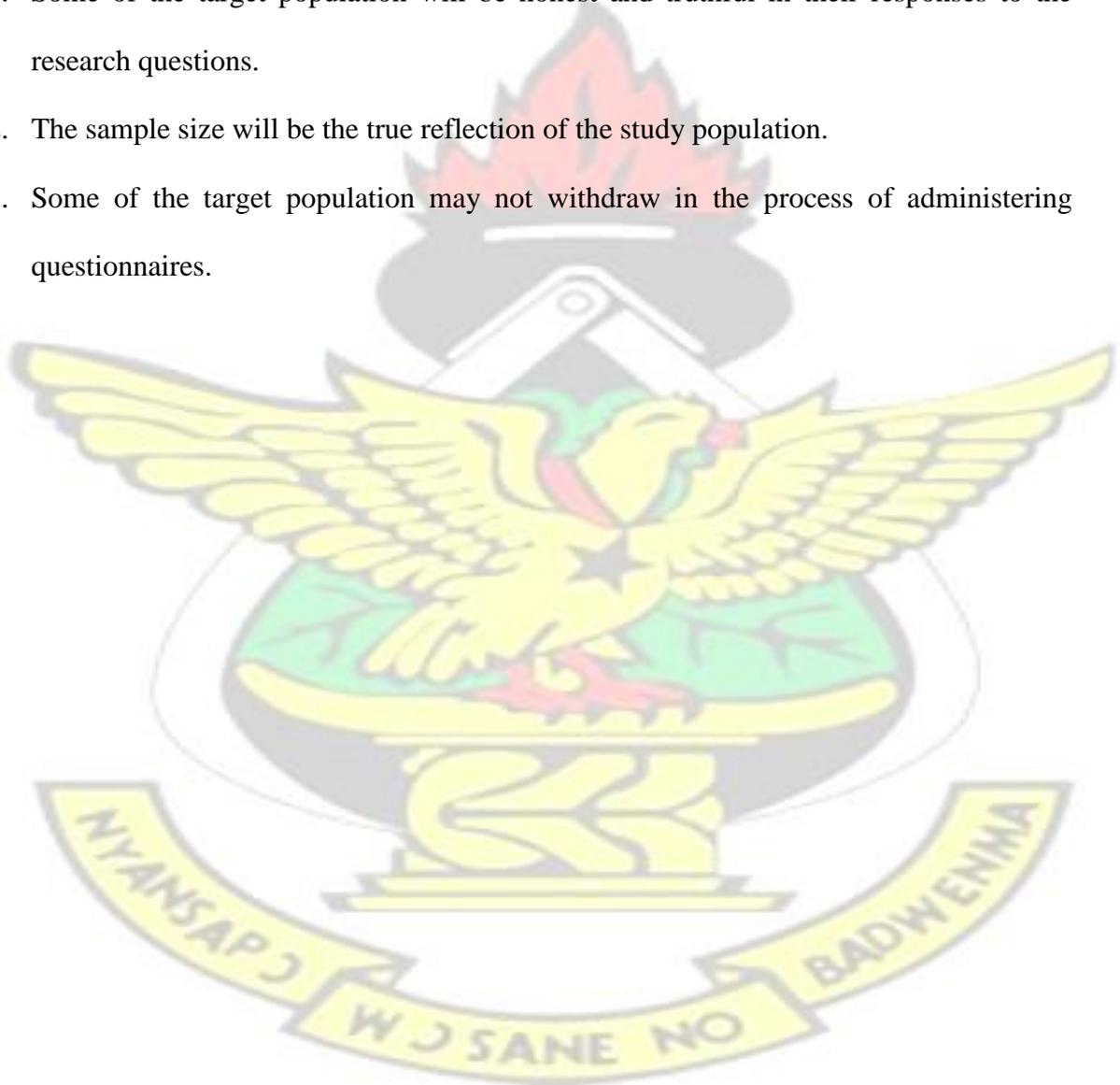
Permission was sought from the ethics committee, municipal health administration and from the participant who would be participating in the study. The participants were assured of confidentiality and they were assured of their ability to withdraw or participate in the study. No

names or person identification numbers reflected in the questionnaires except the numbering for questionnaires" which were used for purposes of identification of data during data editing. The results of the study was availed to the Municipal Director of Health Services of the municipality and to those who expressed interest in knowing the results after analysis.

3.13 ASSUMPTIONS OF THE STUDY

It is assumed that:

1. Some of the target population will be honest and truthful in their responses to the research questions.
2. The sample size will be the true reflection of the study population.
3. Some of the target population may not withdraw in the process of administering questionnaires.



CHAPTER FOUR

RESULTS

4.0 INTRODUCTION

This chapter presents findings from the survey. It consists of four subsections, thus, descriptions of respondents' basic demographic characteristics, knowledge about malaria and IPT among pregnant women, perception about malaria and IPT among pregnant women and challenges of IPT among pregnant women.

4.1 BASIC DEMOGRAPHIC CHARACTERISTICS

Three hundred and ten (310) pregnant women were enrolled into the study. About 38.06% of these women were between the ages of fifteen to twenty-five years (15-25years), while 45.81% of pregnant women were also between twenty-six and thirty-five years. Approximately 16.13% were above the age of thirty-six to forty-five years. Among these pregnant women, 97.73% are married, while 1.62% of these women were single and 0.65% divorced. 93.87% of the pregnant women were living with their partners while 6.13% were not. On the aspect of education, 56.96% of the pregnant women had no formal schooling, 11.33% had primary education, 23.3% had secondary education, while 8.41% had tertiary education. In terms of religion 27.1% were Christians, 65.48% were Muslims while 7.42% of the pregnant women were traditionalist.

Farming is the major occupation of these pregnant women representing 45.48%, although 23.87% were unemployed, while 21.29% were self-employed percent, however, few (9.35%) of these pregnant women were Government employees. In terms of ethnicity Mamprusi is the most dominant tribe (56.13%), Konkombas were 3.55% and Bimobas were 10%; whereas other tribes constituted 20.32%. Table 1 gives a detailed description of their basic demographic characteristics.

Table 4. 1 Description of Respondents Basic Demographic Characteristics

Demographic Characteristics	Frequency	Percent
<i>Age Group</i>		
15-25 yrs	118	38.06
26-35 yrs	142	45.81
36-45 yrs	50	16.13
Total	310	100
<i>Marital Status</i>		
Divorced	2	0.65
Married	302	97.73
Single	5	1.62
Total	309	100
<i>Living with partner</i>		
No	19	6.13
Yes	291	93.87
Total	310	100
<i>Educational Level</i>		
No formal schooling	176	56.96
Primary	35	11.33
Secondary	72	23.3
Tertiary	26	8.41
Total	309	100
<i>Religious Background</i>		
Christianity	84	27.1
Islam	203	65.48
Traditionalist	23	7.42
Total	310	100
<i>Occupational</i>		
Farmer	141	45.48
Government employee	29	9.35
Self-employed	66	21.29
Unemployed	74	23.87
Total	310	100
<i>Ethnicity</i>		
Bimoba	31	10
Konkomba	42	13.55

Mamprusi	174	56.13
Others	63	20.32
Total	310	100

4.2 PREGNANT WOMEN'S KNOWLEDGE ABOUT MALARIA AND IPT

Majority (96.45%) of the women received health education on malaria. Moreover, 96.32% of these women linked transmission of malaria to mosquito bites. Meanwhile, 100% of those who did not receive health education believed mosquito bites as the mode of transmission of malaria.

It's also clear that out of those who received health education on malaria, 54.52% of these women believed malaria causes maternal anemia. Meanwhile 72.73% of those who did not receive health education on malaria also believed maternal anemia is caused by malaria.

Also, 39.13% of the women who received education believed stillbirth can be caused by malaria, whereas 60.87% of them believed otherwise. However, 54.55% of the number that did not receive education also believed stillbirth can be caused by malaria.

Of the total women who had received education on malaria, 66.56% of them claimed malaria can cause maternal death, whereas 33.44% claimed maternal death cannot be attributed to malaria. However, of those who did not receive education on malaria 63.64% claimed malaria can cause maternal death.

About 32% of those who had education on malaria believed that low birth weight of a baby can be the effect of malaria, whereas 67.89% believed otherwise. But of those who had no education on malaria, 36.6% believed that malaria in pregnant women can cause low birth weight of the baby; whereas 63.4% believed otherwise.

Almost 90% of the women who received health education on malaria claimed to have ever heard of IPT. Again, 90% of these women indicated that IPT is only given to pregnant women. Meanwhile, 72% of those who claimed they did not receive health education on malaria indicated IPT is only given to pregnant women. Whereas 61% of those who received health education on malaria claimed the recommended period for IPT dose is between 4 to 6 months

of pregnancy, 63% of those who did not receive health education on malaria also claimed it is between 4 to 6 months of pregnancy. On their opinion about the use of IPT, 62% of the women who had education on malaria thought IPT is used to prevent malaria, whereas 36% of those who had no education on malaria also thought IPT is used to prevent malaria. Interestingly, 63% of those who had no education on malaria thought IPT is used to prevent anaemia and pneumonia.

Table 4. 2 Pregnant women’s knowledge about malaria and IPT

Knowledge about Malaria and IPT	Health Education on Malaria			
	Do nurses give you talk on malaria			
	No (N=11)	%	Yes (299)	%
Mode of transmission of malaria				
Others	0	0.00	11 (3.68)	3.68
Mosquito bites	11	100	288	96.32
Effects of malaria				
Maternal anaemia				
No	3	27.27	136	45.48
Yes	8	72.73	163	54.52
Still birth				
No	5	45.45	182	60.87
Yes	6	54.55	117	39.13
Maternal death				
No	4	36.36	100	33.44
Yes	7	63.64	199	66.56
Low birth weight of baby				
No	7	63.64	203	67.89
Yes	4	36.36	96	32.11
Heard of IPT				
No	5	45.45	30	10.03
Yes	6	54.55	269	89.97
Who qualified for IPT				
Don't know	3	27.27	28	9.36
Pregnant women	8	72.73	271	90.64
Recommended period for IPT dose				
1st-3rd&7th-9th months	4	36.36	114	38.13
4th to 6th months	7	63.64	185	61.87
Opinion about use of IPT				
Others (anaemia, pneumonia)	7	63.64	113	37.79

To prevent malaria	4	36.36	186	62.21
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4.2.1 ASSOCIATION BETWEEN EDUCATION ON MALARIA AND RESPONDENT'S KNOWLEDGE ON MALARIA AND IPT

In all, only two out of the nine factors have significant association with education on malaria. These two factors are “heard of IPT and who qualified for IPT”. There is a very strong association (P value = 0.000) between education on malaria and heard of IPT. About ninety percent of the respondents have heard of IPT through health education on malaria. Although there is association between “who qualified for IPT and education on malaria”, it’s not a strong association (P value = 0.05). The remaining factors (mode of transmission of malaria, maternal anaemia, stillbirth, maternal death, low birth weight of baby, recommended period for IPT dose and respondents’ opinion about the use of IPT) do not have significant association between health education on malaria. The absence of association between these factors and health education on malaria could be attributed to the fact the health talks given by nurses on malaria do not put much emphasis on these areas.

Table 4.3: Association between Health Education on Malaria and Knowledge about Malaria and IPT.

Knowledge about Malaria and IPT	Health Education on Malaria				
	Do Nurses give you talk on malaria				
	No (N=11)	%	Yes (N=299)	%	P-Value
Mode of transmission of malaria					
Others	0	0.00	11	3.68	0.517
Mosquito bite	11	100.0	288	96.32	
Effects of malaria					
Maternal anaemia					
No	3	27.27	136	45.48	0.233
Yes	8	72.73	163	54.52	
Still birth					
No	5	45.45	182	60.87	0.305
Yes	6	54.55	117	39.13	

Maternal death					
No	4	36.36	100	33.44	0.84
Yes	7	63.64	199	66.56	
Low birth weight of baby					
No	7	63.64	203	67.89	0.767
Yes	4	36.36	96	32.11	
Heard of IPT					
No	5	45.45	30	10.03	0.001
Yes	6	54.55	269	89.97	
Who qualify for IPT					
Don't know	3	27.27	28	9.36	0.052
Pregnant women	8	72.73	271	90.64	
Recommended period for IPT dose					
1 st - 3 rd & 7 th - 9 th months	4	36.36	114	38.13	0.906
4 th - 6 th months	7	63.64	185	61.87	
Opinion about use of IPT					
Others(anaemia, pneumonia)	7	63.64	113	37.79	0.084
To prevent malaria	4	36.36	186	62.21	

4.2.2 SUGGESTIONS OF RESPONDENTS

About forty-eight percent of the respondents suggested that more education should be done on SP, IPT and early ANC attendance. Twenty-eight percent suggested regular supply of SP to health facilities. And nineteen percent recommended provision of clean water and cups at the health facilities.

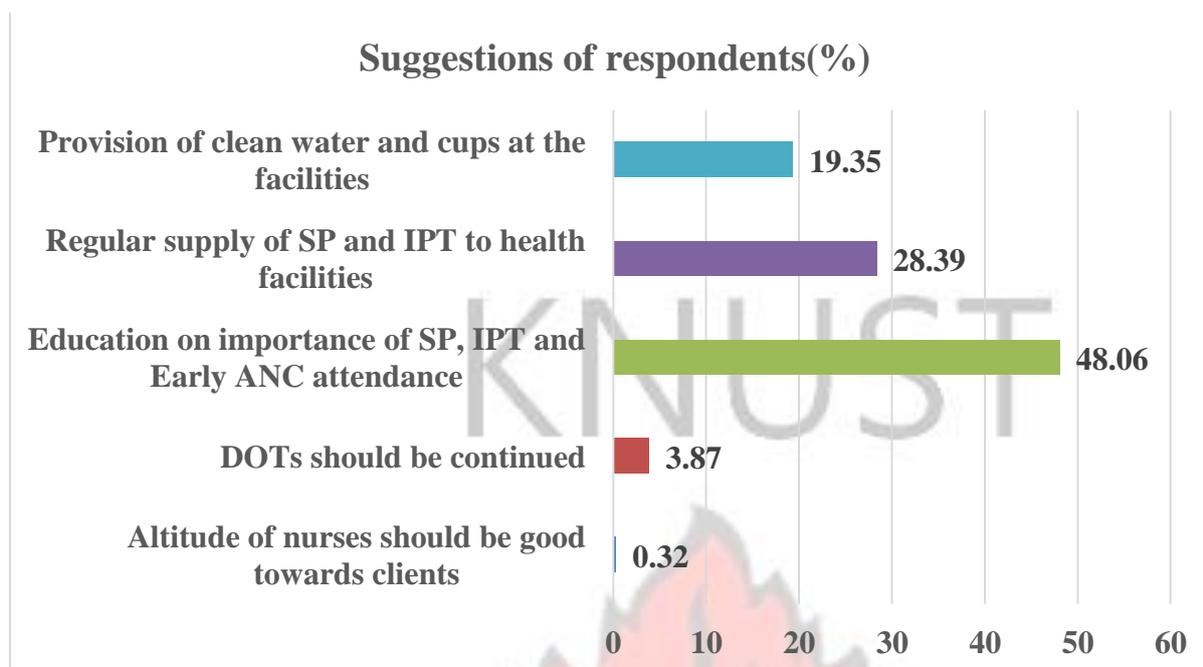


Figure 4. 1 Respondents' suggestions

4.3 PERCEPTION ABOUT MALARIA AND IPT AMONG PREGNANT WOMEN

On the whole, about fifty-one percent (50.81%) of the pregnant women knew that failure to take SP during pregnancy can put the health of the mother and the unborn baby in danger, apart from that, a quite number of respondents representing sixty-three percent (63%) also knew that taking of SP safeguards pregnant women from malaria. In addition to these, almost sixty percent (59.35%) of respondents suggested that SP should be continued to be given to pregnant women in various clinics during ANC. Meanwhile close to sixty-one percentage (60.97%) of respondents agreed that side effects associated with taking SP prevents pregnant women from taking it. In addition to that, about fifty-one percent (51.29%) of the respondents also agreed that pregnant women will not be willing to take SP without DOT.

However, the perception about malaria and IPT among pregnant women remain an issue with fifty percentage (50%) of respondents still perceived that taking of SP can cause miscarriage.

Below is a table on the perceptions about malaria and IPT among pregnant women.

Table 4. 3 Perception about Malaria and IPT among pregnant women

Data	Frequency	Percent
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<i>Do you suggest that failure to take SP during pregnancy can put the health of the mother and the unborn baby in danger?</i>		
Don't know	20	6.47
No	132	42.72
Yes	157	50.81
Total	309	100
<i>Do you perceive the taking of SP safeguards a pregnant woman from malaria?</i>		
Don't know	21	6.77
No	80	25.81
Yes	209	67.42
Total	310	100
<i>Do you suggest that SP should be continued to be given to pregnant women in various clinics during ANC?</i>		
Don't know	16	5.16
No	110	35.48
Yes	184	59.35
Total	310	100
<i>Do the side effects associated with taking SP prevent pregnant woman from taking SP?</i>		
Don't know	27	8.71
No	94	30.32
Yes	189	60.97
Total	310	100
<i>Do you believe that pregnant women will be able and willing to taking SP without DOT</i>		
Don't know	23	7.42
No	159	51.29
Yes	128	41.29
Total	310	100
<i>In your opinion, does taking of SP prevents pregnant women from miscarriage?</i>		
Don't know	34	10.97
No	155	50
Yes	121	39.03
Total	310	100

4.4 CHALLENGES OF IPT AMONG PREGNANT WOMEN

As shown in table 4.5, about fifty-two percent (52.26%) of the respondents started going for ANC services between 4 and 6 months of their pregnancy. Thirty-one percent (31.61%) visited for the first time between 1 and 3 months of their pregnancy and sixteen percent (16.13%)

between 7 and 9 months of pregnancy. This is a worrying situation as majority of the pregnant women would not get the full package of ANC services.

The most worrying part of it is that about sixty-eight percent (68.06%) of the pregnant women made up to 3 visits for ANC and three percent (3.23%) made up to 9 visits during pregnancy. Sixty-seven percent (67.74%) thought drug reactions could make them not to follow IPT uptake, twenty-four percent (24.19%) linked their inability to follow IPT uptake to distance to the health facilities; whereas six percent 6.45% linked it to staff attitude towards them. Meanwhile an overwhelming majority of ninety-eight percent (98.71%) said their religion allow them to take IPT during ANC visits, yet fifty-four percent (54.19 %) claimed they took IPT at each visit during their pregnancy. Nearly forty-five percent (45.81%) did not take IPT at each visit and they blamed it on non-availability of the drug. In fact, ninety-seven percent (97.18%) claimed there were shortages of the drugs and almost three percent (2.82%) did not take it because of the drug scent and sometimes they feel dizziness.

About ninety percent (90%) of the pregnant women take the IPT drugs in the clinics and seventy-three percent (73.87%) of the women like taking it in the clinics. And about seventyfour percent of the respondents never missed their drugs.

Table 4. 4 Challenges of IPT among pregnant women

Data	Frequency	%
<i>At what age of your pregnancy did you start visiting the ANC clinic</i>		
1st to 3rd months	98	31.61
4th to 6th months	162	52.26
7th to 9th months	50	16.13
Total	310	100
<i>How many visits did you make to the ANC during pregnancy</i>		
1 to 3 times	211	68.06
3 to 6 times	9	2.9
4 to 6 times	80	25.81
7 to 9 times	10	3.23
Total	310	100

<i>What barriers do you think can make a pregnant woman not follow IPT uptake</i>		
Attitude of health staff	20	6.45
Distance to Health Facility	75	24.19
Drug reactions	210	67.74
Others	5	1.61
Total	310	100
<i>In your opinion, does your religion allows you to take IPT during ANC visits</i>		
No	4	1.29
Yes	306	98.71
Total	310	100
<i>Did you take the IPT at each visit</i>		
No	142	45.81
Yes	168	54.19
Total	310	100
<i>Reasons for not taking IPT</i>		
Stockout of SP	138	97.18
Feeling weak and dizzy/ Scent of drugs	4	2.82
Total	142	100
<i>Where IPT was taking</i>		
Home	11	6.59
In the clinic	149	89.22
Outside the clinic	7	4.19
Total	167	100
<i>Is there any time you didn't take the drugs given to you in the clinic</i>		
No	231	74.52
Yes	79	25.48
Total	310	100
<i>Do you like taking the drugs in the clinic</i>		
No	81	26.13
Yes	229	73.87
Total	310	100

4.5 Reasons respondents like taking the drugs in the clinic

As can be seen in figure 4.2, fifty-five percent of the respondents like taking the drugs in the clinics for the sake of their health. Twenty-four percent also do so, so that they can be closely monitored by the nurses. About seventeen preferred taking it in clinics because they believed that they can forget to take it at home. And less than two percent believed taking in the clinics is safer than at home.

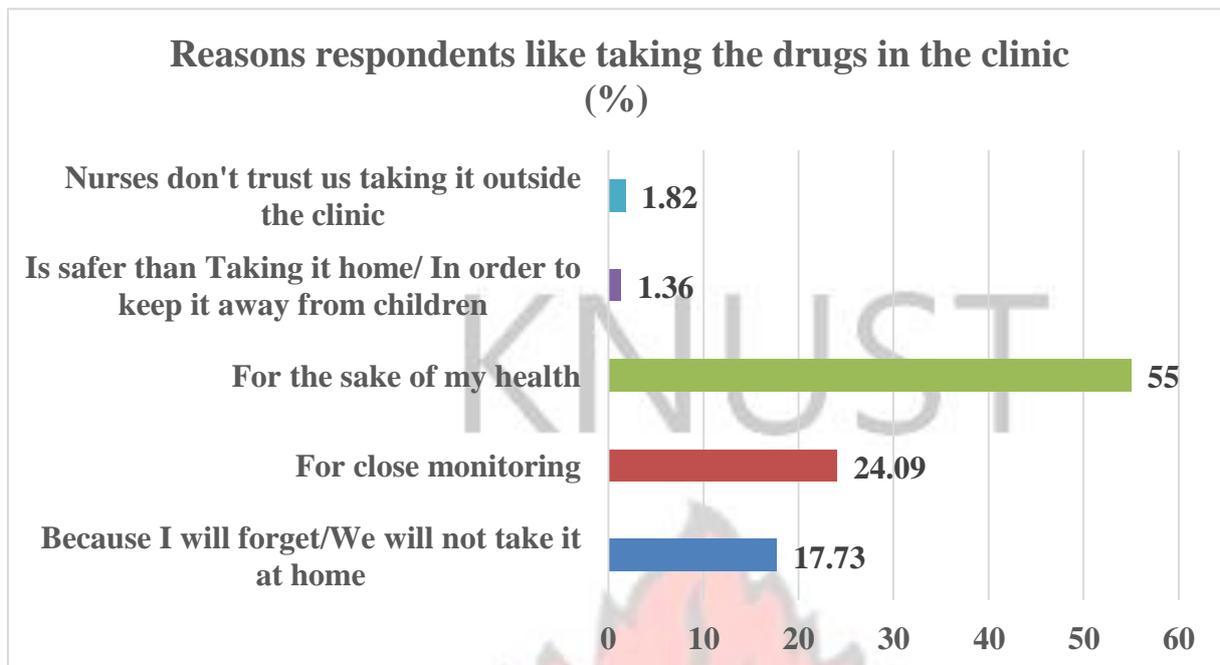
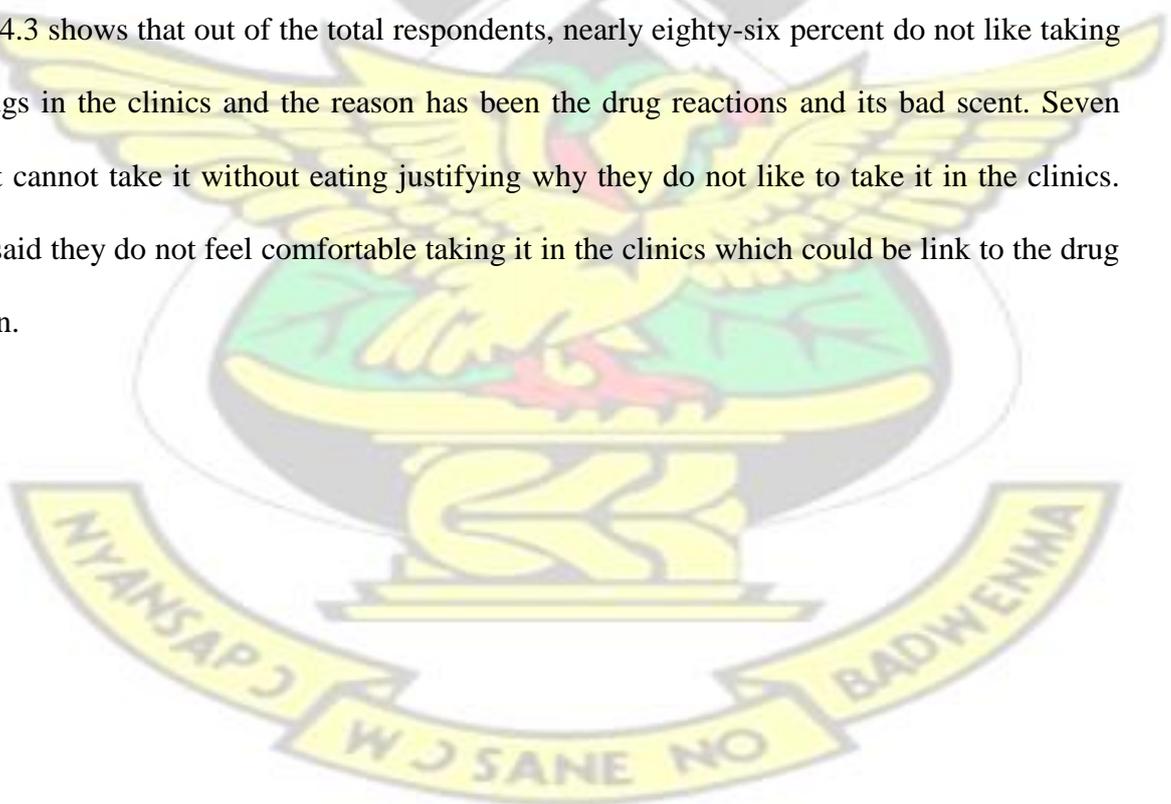


Figure 4. 2 Reasons respondents like taking the drugs in the clinic

4.6 Reasons respondents don't like taking the drugs in the clinic

Figure 4.3 shows that out of the total respondents, nearly eighty-six percent do not like taking the drugs in the clinics and the reason has been the drug reactions and its bad scent. Seven percent cannot take it without eating justifying why they do not like to take it in the clinics. Some said they do not feel comfortable taking it in the clinics which could be link to the drug reaction.



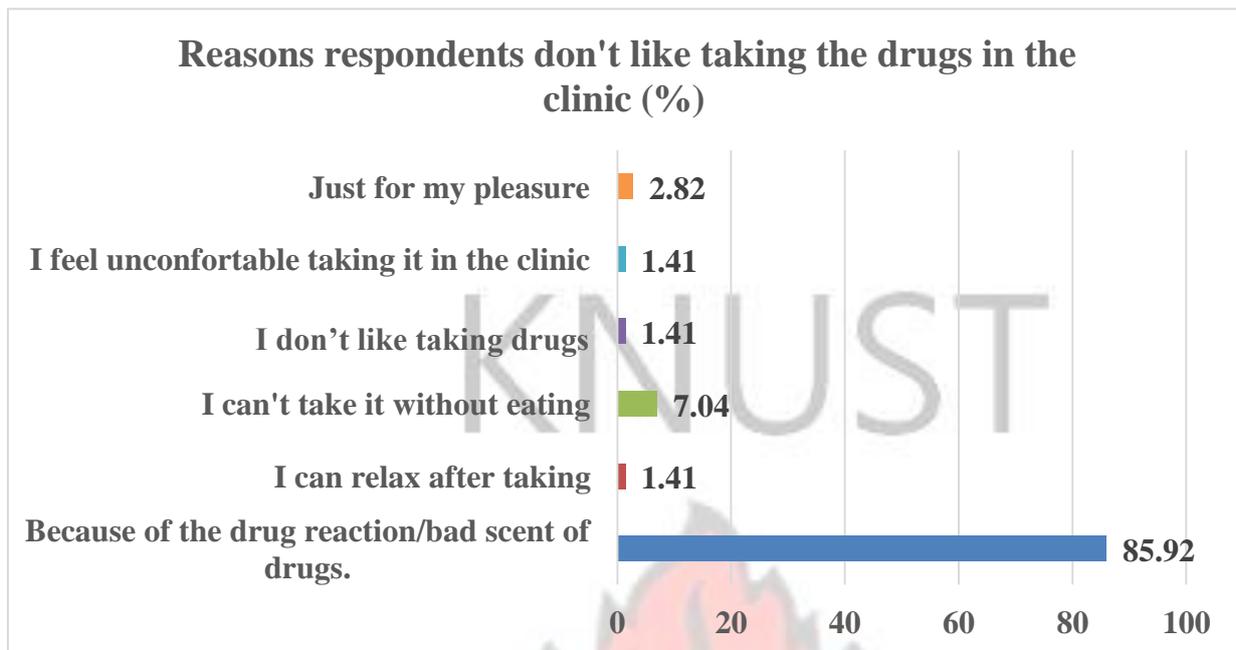


Figure 4. 3 Reasons respondents don't like taking the drugs in the clinic

4.7 BARRIERS MAKING PREGNANT WOMEN NOT TO FOLLOW IPT UPTAKE

From the study, it was ascertained that 67.74% of the respondents attributed their failure to follow IPT uptake to drug reactions. Also 24.19% claimed distance to the health facilities is the main cause of their inability to follow IPT uptake; and 6.45% linked it to staff attitude towards them.

It appears these barriers might have an association with age of pregnancy at first visit. Drug reactions and distance to the health facilities can affect the timing of first ANC visit and even staff attitude towards the pregnant women. In this sense the researcher ascertained if there was significant association between “barriers making pregnant women not to follow IPT uptake and Age of Pregnancy at First ANC Visit”. The table below shows the results of a chisquare output. Since the p-value is greater 0.05 there is no significant association between “barriers making pregnant women not to follow IPT uptake and age of pregnancy at first visit”.

Table 4. 5 Association between barriers affecting IPT uptake and age of pregnancy at first ANC Visit

Age of Pregnancy at First ANC Visit	Barriers affecting IPT uptake								P-value
	Attitude of health staff		Distance to health facility		Drug reaction		Others		
	Count	%	Count	%	Count	%	Count	%	
1st to 3rd months	4	20	24	32	69	32.86	1	20	0.371 > 0.05
4th to 6th months	13	65	34	45.33	111	52.86	4	80	
7th to 9th months	3	15	17	22.67	30	14.29	0	0	

4.8 Association between barriers affecting IPT uptake and number of ANC visit

The researcher investigated to find out if there was an association between barriers affecting IPT uptake and number of ANC visit. Again, the statistical tool adopted was the chi-square.

The results which is shown in the table below indicated that there is a statistically significant association between barriers affecting IPT uptake and number of ANC. About 71% of the respondents who claimed drug reactions is the reason for their inability to follow IPT uptake, made 1 to 3 times visits. About 25% of them made 4 to 6 times visits and 4.29% made 7 to 9 times visits. Clearly, the number times pregnant women go for ANC drops as far as drug reactions is concerned. Again, the number of times pregnant women go for ANC drops with respect to distance to the health facilities. Because of the reactions of IPT drug and the distance to the health facilities, pregnant women fails to follow IPT uptake which indirectly affects the number of ANC visits.

Table 4. 6 Association between barriers affecting IPT uptake and number of ANC visit

	Attitude of health staff (N=20)	Distance to health facility (N=75)	Drug reaction (N=210)	Others (N=5)	P-value

Number of ANC Visits	Count	%	Count	%	Count	%	Count	%	
1 to 3 times	7	35	51	68	149	70.95	4	80	0.011
4 to 6 times	13	65	23	30.67	52	24.76	1	20	
7 to 9 times	0	0	1	1.33	9	4.29	0	0	



CHAPTER FIVE

DISCUSSION

5.0 INTRODUCTION

This chapter discusses findings obtained from the specific objectives. It compares the results to previous research already cited in the literature review.

5.1 KNOWLEDGE ABOUT MALARIA AND IPT AMONG PREGNANT WOMEN

One of the research questions was to assess the knowledge of pregnant women on malaria prevention in pregnancy using sulfadoxine –pyrimethamine.

As many as 96.45% of the women received health education on malaria. Also, 96.32% of these women linked transmission of malaria to mosquito bites. Meanwhile, all those who did not receive health education equally believed mosquito bites as the mode of transmission of malaria.

It's also clear that out of those who received health education on malaria 54.52% of these women believed malaria causes maternal anemia. Meanwhile close to 73% of those who did not receive health education on malaria also believed maternal anemia is caused by malaria.

Also, 39.13% of the women who received education believed stillbirth can be caused by malaria, whereas 60.87% of them believed otherwise. However, 54.55% of the number that did not receive education also believed stillbirth can be caused by malaria.

Of the total women who had received education on malaria, 66.56% of them claimed malaria can cause maternal death, whereas 33.44% claimed maternal death cannot be attributable to malaria. However, of those who did not receive education on malaria 63.64% claimed malaria can cause maternal death.

Furthermore, 32.11% of those who had education on malaria believed that low birth weight of a baby can be the effect of malaria, whereas close to 68% believed otherwise. But of those who

had no education on malaria, 36.36% believed that malaria in pregnant women can cause low birth weight of the baby; whereas 63.64% believed otherwise and these supports the study in the literature review that confirms that knowledge about IPTp remain low among pregnant women in the SSA, a situation that ties to late and inconsistent attendance of ANC facilities (Ouma *et al.*,2007; Nganda *et al.*,2004; Enato *et al.*,2007).

Health education sessions is therefore crucial at the clinics for the pregnant women. The education should be intensified, and pregnant women encouraged to attend these sessions. There should also be innovative ways of repeating the health education topics during the whole period of the ANC so that everyone who attends gets to hear the messages no matter the time of attending clinic. The level of knowledge of the effects that malaria can have on Mother and baby was found to be poor in a group of pregnant women who attended ANC at two health facilities in the Edo State of Nigeria. This will definitely inform their choice of adhering to IPTp .if malaria is perceived as a common health problem by pregnant women, their practice of IPTp would also be poor(Enato *et al.*,2007).

Nearly 90% of the women who received health education on malaria claimed to have ever heard of IPT. Again, 90.64% of these women indicated that IPT is only given to pregnant women. Meanwhile, almost 73% of those who claimed they did not receive health education on malaria indicated IPT is only given to pregnant women. Whereas 61.87% of those who received health education on malaria claimed the recommended period for IPT dose is between 4 to 6 months of pregnancy, 63.64% who did not receive health education on malaria also claimed is between 4 to 6 months of pregnancy. On their opinion about the use of IPT, 62.21% of the women who had education on malaria thought IPT is used to prevent malaria, whereas 36.36% of those who had no education on malaria also thought IPT is used to prevent malaria. Interestingly, 63.64% of those who had no education on malaria thought IPT is used to prevent anaemia and pneumonia.

It appears provision of education on any subject line has some influence on one's knowledge on the subject. Its for this reason that health facilities are encouraged to offer health education to their clients as part of their (facilities) routine activities.

5.2 PERCEPTION ABOUT MALARIA AND IPT AMONG PREGNANT WOMEN

In the whole, majority (50.81%) of the pregnant women knew that failure to take SP during pregnancy can put the health of the mother and the unborn baby in danger, apart from that, a quite (62.9%) number of respondents also knew that taking of SP safeguards pregnant women from malaria. In addition to these, a good number (59.35%) of respondents suggested that SP should be continued to be given to pregnant women in various clinics during ANC.

However, the perception about malaria and IPT among pregnant women still remain an issue with half (50%) of respondents still perceived that taking of SP can cause miscarriage as well as a good proportion (60.97%) of respondents agreeing that side effects associated with taking SP prevents pregnant women from taking it. In addition to that, a little above half (51.29%) of respondents also agreed that pregnant women will not be willing to take SP without DOT and these supports a study conducted in Kenya that found perceived barriers such as the high risk of miscarriage and skin reaction discouraged the IPT uptake (Guyatt et al., 2004).

5.3 CHALLENGES OF IPTp AMONG PREGNANT WOMEN

Fifty-two percent of the respondents started going for ANC services between 4 and 6 months of their pregnancy. Thirty-one percent visited for the first time between 1 and 3 months of their pregnancy and sixteen percent between 7 and 9 months of pregnancy. This is a worrying situation as majority of the pregnant women would not get the full package of ANC services.

The most worrying part of it is that about sixty-eight percent of the pregnant women were made up to 3 visits for ANC and three percent made up to nine visits during pregnancy. About sixty-eight percent thought drug reactions could make them not to follow IPT uptake, twenty-four percent linked their inability to follow IPT uptake to distance to the health facilities; whereas

six percent linked it to staff attitude towards them. Meanwhile ninety-eight percent said their religion allow them to take IPT during ANC visits, yet fifty-four percent claimed they took IPT at each visit during their pregnancy. Forty-five percent did not take IPT at each visit and they blamed it on non-availability of the drug. In fact, ninety-seven percent claimed there were shortages of the drugs and about three percent did not take it because of the drug scent and sometimes they feel dizziness and these support a study that confirms that, The coverage of IPTp is reduced in the face of drug stock outs as evidenced by a study conducted in Tanzania where 40 percent of women interviewed had not received SP because of SP unavailability (Tarimo, 2007).

Inconsistency in the supply of clean and safe drinking water for the administration of the SP is another factor that affects the practice of DOT. Health workers compliance with the direct observed therapy in administering SP for IPTp becomes questionable in the face of shortage of clean water and cups at ANC clinics (Mubyazi *et al.* 2005). Thus IPTp coverage declines when there is no water in the ANC for the pregnant women to swallow SP under DOT.

About ninety percent of the pregnant women take the IPT drugs in the clinics and seventythree percent of the women like taking it in clinics. The main reasons why they prefer taking IPT in the clinics, are for the nurses to monitor them and they do so for the sake of their general welfare. Seventy-four percent claimed they never missed taking. The main reason given for those who did not like taking the drug in clinics was because of the drug reaction/bad scent of drugs. About eighty-six percent of these women claimed drug

reaction/bad scent of drugs is the reason their dislike of taking the drugs in the clinics

About sixty-seven percent of the respondents attributed their failure to follow IPT uptake to drug reactions. Twenty-four percent claimed distance to the health facilities main cause of their inability to follow IPT uptake; and six percent linked it to staff attitude towards them.

It appears these barriers might have an association with age of pregnancy at first visit. Drug reactions and distance to the health facilities can affect the timing of first ANC visit and even staff attitude towards the pregnant women. In this sense the researcher ascertained if there was significant association between “barriers making pregnant women not to follow IPT uptake and pregnant women not to follow IPT uptake”. Since the p value is greater 0.05 there is no significant association between “barriers making pregnant women not to follow IPT uptake and age of pregnancy at first visit.

The researcher investigated to find out if there was an association between barriers affecting IPT uptake and number of ANC visit using the chi-square. Interestingly a statistically significant association between barriers affecting IPT uptake and number of ANC was obtained. About 71% of the respondents who claimed drug reactions is the reason for their inability to follow IPT uptake, made 1 to 3 times visits. A quarter (25%) of them made 4 to 6 times visits and 4.29% made 7 to 9 times visits. Clearly, the number times pregnant women go for ANC drops as far as drug reactions is concerned.

Again, the number of times pregnant women go for ANC drops with respect to distance to the health facilities. Because of the reactions of IPT drug and the distance to the health facilities, pregnant women fails to follow IPT uptake which indirectly affects the number of ANC visits.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

6.1.1 KNOWLEDGE ABOUT MALARIA AND IPT AMONG PREGNANT WOMEN

The study reveals that, majority of women had education on malaria and how it is transmitted as well as a significant number having heard about intermittent preventive Therapy and this

can influence their Health seeking behavior positively towards the uptake of IPT during ANC sessions. It is also clear that a good number of women knew the effects of malaria in pregnancy regarding maternal anemia and maternal death as well. In addition to these, the respondents knew the recommended doses of IPT during pregnancy and also agreed that IPT is used for the prevention of malaria.

6.1.2 PERCEPTION ABOUT MALARIA AND IPT AMONG PREGNANT WOMEN

On the whole, majority of women know that failure to take SP during pregnancy can put the health of the mother and the unborn baby in danger as well as supporting the fact that taking of SP safeguards a pregnant woman from malaria. Apart from that, the respondents also suggested that SP should be continued to be given to pregnant women in various clinics during ANC sessions.

6.1.3 CHALLENGES OF IPTp AMONG PREGNANT WOMEN

The study reveals that about fifty-three percent of the respondents started going for ANC services between 4 and 6 months of their pregnancy.

About sixty-eight percent of the pregnant women made up to three visits for ANC during pregnancy. Sixty-eight percent thought drug reactions could make them not to follow IPT uptake. It is also clear that the number of times pregnant women go for ANC drops with respect to distances to health facilities and drug reaction.

In addition to that, about forty-six percent did not take IPT at each visit and they blamed it on non-availability of the drug. In fact, about ninety-seven percent claimed there were shortages of the drug and few attributed it to the scent of the drug and dizziness.

6.2 RECOMMENDATIONS

Based on the above results, the following recommendations are being made to the Municipal Directorate of Health Services, Sub-Municipal Heads and Non-Governmental Organizations

(NGO's) to consider in services delivery regarding maternal and child Health.

1. The Municipal Health directorate (MHD) should collaborate with the Municipal Assemble and other NGOs to help in the constructions of community-based planning and Health services (CHPS) to help in easy access to health facility.
2. The Municipal Health Directorate should task Sub-Municipalities to organize series of durbars to sensitize pregnant women on the importance of IPT uptake.
3. The municipal health directory should encourage facilities to lay more emphasis on importance of early ANC attendance during health education.
4. The municipal health directorate should ensure regular supply of SP to health facilities.
5. Facility heads should ensure that there is adequate supply of clean water and cups at antenatal clinics for the uptake of SP.
6. The facility heads should emphasis on the effective use of DOTs at various antenatal clinics.
7. The municipal health directorate should organize in service training to take health staff through code of ethics in order to effect change in staff attitude.
8. The municipal health directorate and sub-municipal heads should ensure that outreach points are increased in order to improve coverage.
9. The community health management committee should ensure that all pregnant women adopt the IPT policy.

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APPENDICES

APPENDIX I

QUESTIONNAIRE

INFORMED CONSENT

Good morning/afternoon/evening. My name is (Name of Enumerator). I would like to have an interview with you on the uptake of I.P.T and would very much appreciate your participation. The information you provide is only for academic purposes and would be treated confidential. This interview usually takes between 20 and 30 minutes to complete. All of the answers you will give will be confidential and will not be seen by anyone other than my thesis team. Should I ask any question you are not comfortable with and don't want to answer, just let me know and I will go on to the next question. It's however my hope that you will participate fully in the survey since your views are important.

Signature of interviewer: Date: ____/____/2019

Questionnaire no: Name of Health Facility:

Name of Interviewer:

SECTION A (Demographic Characteristics)

Tick the appropriate box [√]

1. What is your age? (In complete years). 15-25yrs [] 26-35yrs [] 36-45yrs []
2. What is your marital status? (**Tick one**). Married [] Single [] Divorced []
Widowed []
3. Do you live with your partner? (**Tick one**). Yes [] No []
4. What is your highest educational level? (**Tick one**). No formal schooling [] Primary [] Secondary [] Tertiary []
5. What is your religious affiliation? (**Tick one**). Islam [] Christianity []
Traditionalist [] Others please specify
6. What is your occupation? (**Tick one**). Unemployed [] Farmer [] Self-employed []
Government employee [] Others please specify
7. What is your ethnicity? (**Tick one**). Mamprusi [] Bimoba [] Konkomba []
Others please specify

SECTION B (Knowledge about Malaria and IPT among Pregnant Women)

8. How is malaria transmitted Mosquito bites [] House flies []
Termites [] Others, please specify

Effects of malaria in pregnancy include

9. Maternal anaemia. Yes [] No [] Don't know []
10. Still birth. Yes [] No [] Don't know []
11. Maternal death. Yes [] No [] Don't know []
12. Low birth weight of baby. Yes [] No [] Don't know []
13. Have you heard about Intermittent Preventive Therapy IPT? Yes [] No []

14. Intermittent Preventive Therapy can be given to? Men [] Infants [] Pregnant women [] Don't know [].

15. When is IPT Doses recommended to be used during pregnancy? 1st to 3rd months [] 4th to 6th months [] 7th to 9th months []

16. What is your opinion about the use of IPT during pregnancy?

To prevent anaemia [] To prevent malaria [] To prevent pneumonia []
To prevent hypertension []

SECTION C (Perception about Malaria and IPT among Pregnant Women)

17. Do you suggest that failure to take sp during pregnancy can put the health of the mother and the unborn baby in danger? Yes [] No [] Don't know []

18. Do the side effects associated with taking sp prevent pregnant woman from taking sp? Yes [] No [] Don't know []

19. In your opinion, does taking of sp prevents pregnant women from miscarriage? Yes [] No [] Don't know []

20. Do you perceive the taking of sp safeguards a pregnant woman from malaria? Yes [] No [] Don't know []

21. Do you suggest that sp should be continued to be given to pregnant women in various clinics during ANC? Yes [] No [] Don't know []

22. Do you believe that pregnant women will be able and willing to take sp without DOT? Yes [] No [] Don't know []

SECTION D (Challenges of IPTp among pregnant women)

23. At what age of your pregnancy did you start visiting the ANC clinic?

1st to 3rd months [] 4th to 6th months [] 7th to 9th months [] 24.

How many visits did you make to the ANC during pregnancy?

1 to 3 times [] 4 to 6 times [] 7 to 9 times [].

25. What barriers do you think can make a pregnant woman not follow IPT uptake? Drug reactions [] Distance to Health Facility [] Attitude of health staff []
Others please specify.....

26. In your opinion, does your religion allows you to take IPT during ANC visits?

Yes [] No []

27. If No to question 26 above, why?

.....
.....

28. Do Nurses give talk on malaria? Yes [] No [] Don't know []

29. Did you take the IPTp at each visit? Yes [] No []

30. If "No" give reason(s).....

31. If "Yes" where did you take it? Home [] In the Clinic [] Outside the clinic []

32. Is there any time you didn't take the drugs given to you in the clinic? Yes [] No []

33. Do you like taking the drugs in the clinic? Yes [] No []

34. Give reason(s) for your choice in question (33) above.....

35. Is there any time you used IPT during pregnancy and still had malaria? Yes [] No []

36. What would you suggest to improve IPT use in the Clinics.....

APPENDIX II

ETHICAL CLEARANCE



KWAME NKUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES



SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

Our Ref: CHRPE/AP/438/19

9th July, 2019.

Mr. Fusheini Alhassan
Department Health Education
and Promotion
School of Public Health
KNUST-KUMASI.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: *"Factors Influencing the Uptake of Intermittent Preventive Treatment (Sulfadoxine Pyrimethamine) among Pregnant Women in the East Mamprusi Municipality in the Northern of Ghana."*

Proposed Site: *East Mamprusi Municipality – Nalerigu, Gambaga, Langbinsi, Sakogu and Gbintri.*

Sponsor: *Principal Investigator.*

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A notification letter of 8th May, 2019 from the East Mamprusi Municipal Health Directorate (study site) indicating approval for the conduct of the study at the Municipality.
- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 9th July, 2019 to 8th July, 2020 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Thank you, Sir, for your application.

Yours faithfully,


Osomfo Prof. Sir J. W. Acheampong MD, FWACP
Chairman



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APPENDIX III

APPROVAL LETTER FROM STUDY AREA

GHANA HEALTH SERVICE, EAST MAMPRUSI MUNICIPAL

GHANA HEALTH SERVICE

MUNICIPAL HEALTH
DIRECTORATE

P. O. BOX 2
GAMBAGA

Tel: +233-71-23794

8th May, 2019

OUR CORE VALUES

1. People Centered
2. Professionalism
3. Team work
4. Innovation
5. Dicipline
6. Integrity



Our Ref No: GHS/NR/EMM/19/2

**COLLEGE OF HEALTH SCIENCE
SCHOOL OF PUBLIC HEALTH
DEPARTMENT OF HEALTH
PROMOTION AND EDUCATION-
KNUST.**

Dear Sir/Madam,

ACCEPTANCE LETTER

With reference to you letter dated 29th of April 2019 Concerning FUSHEINI ALHASSAN, an MPH student in the department of Health Promotion and Education, The municipal Health Directorate write to welcome the above student for the study.

Hoping that the study will come out with findings and recommendation that will be used to improve health Service delivery in the East Mamprusi Municipality.

Thank you.

Yours faithfully

MR. MARK A. ABUGRI

MUNI... DIR. OF HEATH SERVICE



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