

UNIVERSITY OF LIBERIA

Factors influencing uptake of intermittent preventative treatment of malaria in pregnancy at
the Redemption Hospital (September 2021)

By

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IJSER

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Declarations

Candidate's Declaration:

I hereby declare that this study/Research was done by me and that no part of this study/Research was photocopied and/or presented to this university or any other Institutions of learning for another degree.


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Candidate's Signature:  Date: December 10, 2021

Supervisors' Declaration:

This is to certify that we have reviewed and examined the Thesis submitted by the above- named Student and hereby found it to be complete and satisfactory in all respects as established by the University of Liberia Graduate Studies and that all relevant revisions required by the Review Committee have been made:

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Dedication

I am extremely pleased to dedicate this thesis to my Mom, Mrs. Elsie J. Tonpo for her countless and continuous effort, care financially, morally and spiritually throughout my undergrad journey up to this point of my graduate studies. I also want to dedicate this research work to the following personalities: Mrs. Alice J. Kamara (Aunty) for her love, care and support shown me throughout the years, Dr. Laura Skrip (Lecturer & Supervisor at the University of Liberia School of Public Health) for her tireless effort in ensuring that my thesis work becomes a success and finally my beloved fiancée (Janet L. Saysay) for pushing me and supporting me despite the huge challenges we both faced.

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ABSTRACT

This thesis used a quantitative approach to investigate factors influencing uptake of intermittent preventative treatment of malaria in pregnancy at the Redemption Hospital (September 2021). The target sample for the study was 250 pregnant women attending ANC at the Redemption Hospital. Closed-ended structured questionnaires were used to collect the information from women who attended clinic on the days the research was conducted (convenience sampling). The results of study found that majority of participants (n=207, 82.8%) were knowledgeable on the prevention of malaria during pregnancy. The unavailability of SP was shown to be an issue at Redemption Hospital. Furthermore, most participants said that they carry or buy their own water when they come to the clinic in order to take the SP that is given them. Additionally, attitudes of healthcare workers towards pregnant women were found to be good. Majority of the pregnant women (n=208, 83.2%) indicated that healthcare workers have not acted rude on them during their ANC visits. Accordingly, to enhance transparency and accountability, the study recommends that the conduct of bi-monthly training sessions for health workers as a way of building their capacity for delivering health education; a regular monitoring and evaluation of IPT services must also be stressed to guarantee continuous availability of drugs, clean water and clean cups for proper IPT management. The Redemption Hospital should adapt best practices from other government and private run Hospitals and budget for provision of safe and clean water. The benefits of SP should be taught during ANC health education sections to guarantee that antenatal women know the correct number of doses that are required of them. Moreover, an external monitoring Team should be set-up to check on the administration of SP.

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CHAPTER ONE

1.0 INTRODUCTION

This chapter presents the introductory section and discussed various components of the introduction to the research. It includes the background to the study, statement of the problem, significance of the study, objectives, research questions or hypothesis, scope (limitations and delimitations) of the study, and definition of terms.

1.1 BACKGROUND TO THE STUDY

Malaria infection in pregnancy poses a high burden on the health of the public, with significant threats for the mother, the unborn child and eventually the newborn. However, malaria effect in pregnancy such as mortality and morbidity is most prominent in areas of sub-Saharan Africa where there is widespread (Pell et al, 2011). Every year an estimated 50 million women living in countries where malaria is pervasive in the world become pregnant, about half live in humid regions of Africa with extreme spread of *Plasmodium falciparum*. It has been estimated that death due to malaria in pregnancy affects almost 10,000 of pregnant women and 200,000 of their newborns annually. This burden is specifically attributed in about half of the cases to severe anemia resulting from malaria in pregnancy (WHO, 2016).

There are consequences of women of are pregnant and are infected with malaria such as severe maternal anaemia, low birth weight, prematurity, parasites in the placenta and an increased rate of infant death (Maternal and child health fact sheet, 2008). Low birth weight is a factor that contributes to high infant mortality globally. Malaria during pregnancy is thought to be one of the factors that accounts for up to 12% of all low birth weight; it is also responsible for about 75,000 to 200,000 infant deaths every year (WHO,

2007).

Malaria in Liberia generates serious burden. The spread of malaria is an every year situation in Liberia within all regions, rendering an estimated 4.8 million people at risk (Health Facility Survey, 2018). The Liberia 2018 Health Facility Survey (HFS) established that 34% of all outpatient consultations and an estimated 48% of inpatient cases result from malaria mortality and morbidity. The most vulnerable groups that suffers from the effects of malaria were found to be children under five and pregnant women. Approximately 35% of all cases in children under five and 34% of deaths resulted from malaria. Also, the 2016 Malaria Indicators Survey (MIS) revealed (through the use of the Malaria Rapid Diagnostic Test) 45% prevalence among children 6-59 months. Greater Monrovia was found to have 12% while the South Eastern B region including counties such as River Gee, Grand Kru and Maryland accounts for 69% prevalence.

Reports from the 2019-2020 Liberia Demographic and Health Survey stresses that through the help of various sources of donor support, Liberia is making substantial progress in controlling malaria (Liberia Health Facility Survey, 2018). According to the President Malaria Initiative (PMI), approximately 44% of children who are under five years slept under bed nets, thus signifying a rise from 37% during the period of 2011 (USAID/PMI, 2016).

Despite such progress to ensure high IPTp uptake in Liberia, training of healthcare workers is insufficient to be able to reach the goal of 85% coverage. Hence, there is a necessity to ascertain causes that might be addressed to improve IPTp uptake.

1.2 THE STATEMENT OF THE PROBLEM

Every year about 25 million pregnant women living in Africa reside where there

is high malaria transmission (WHO/AFRO, 2004). It is estimated that about 80-90% of malaria cases in the world occurs in the sub-Saharan Africa putting at risk 19-20 million women who becomes pregnant and experiences adverse effects during their time of pregnancy (Guyatt & Snow, 2001) Also, malaria death is enormously uncommon in areas with low transmission of malaria, this is as a result of high immunity that these women have acquired. The burden of malaria in women living in low transmission areas aren't as high compared to those living in high malaria transmission areas (Nosten *et al.*, 2004).

Malaria in pregnancy and associated morbidity are common in the southern part of Liberia (Liberia Malaria Indicator Survey, 2016). Nevertheless, there is a steady rise or increase in sulphadoxine pyrimethamine resistance (SP) which is predominantly on the increase throughout sub-Saharan Africa, and the availability of alternative tools for the control of malaria during pregnancy is very limited as a result of financial challenges (Steketee & Mutabingwa, 1999). SP has been revealed to have reach 14% and 11% cure rates in 28 days of follow-up in pregnant women and children, respectively (Liberia Malaria Indicator Survey, 2016).

It has been found that ITNs usage in high malaria transmission regions has drastically succeeded in reducing some consequences of malaria such as parasitaemia in malaria and maternal anemia. ITN usage was associated with increased birth weight in areas with the lowest or most seasonal spread according to a randomized-control study conducted to assess how effective ITNs controls and prevents the spread of malaria in pregnancy. (Browne *et al.*, 2001).

Malaria also has economic consequences (Gallup & Sachs, 2001), with enormous costs to countries where there is widespread transmission; government spends hugely in

order to maintain health facilities and healthcare infrastructure, research and education and methods of preventing and controlling vectors that spread malaria. Malaria has a very huge burden in terms of expenditure, as such the cost associated with people suffering from it has been miscalculated especially as it relates to death cases. It has an indirect cost on the lifetime of those who die from it (Gallup & Sachs, 2001). There is a global loss of approximately \$12 billion annually due the consequences of malaria effects on human (Gallup & Sachs, 2001).

Additionally, due to the huge global loss in revenue, countries with high transmission of malaria cases has low economic growth than countries with low transmission of malaria cases. (Gallup & Sachs, 2001). It is also estimated that there is an average growth of 0.4% per capital GDP in regions with *Plasmodium falciparum* whereas it is projected to be 2.3% in other countries as per capital GDP between 1965 and 1990 (Gallup & Sachs, 2001). Malaria treatment cost is on an increasing spree (Gallup & Sachs, 2001).

The findings from this thesis research offer additional information towards the fight against malaria in pregnancy. It offers insight into uptake of interventions that have demonstrable effectiveness but that have low coverage.

1.3 SIGNIFICANCE OF THE STUDY

Malaria prevention in pregnancy is one of the most critical approach in helping to lower the risk of disease and deaths in women of child bearing ages and children under five with the sole purpose of fulfilling the MDGs 4, 5 and 6 (WHO/AFRO, 2004). However, there has not been any research conducted in the Redemption Hospital to measure the implementation of services where issues such as human workforce and

availability of drugs and clean water became limiting issues to the services being provided since the introduction of IPT services in Liberia ten years ago.

This research has revealed concerns such as connection between the pregnant woman and those who provide the needed services as issues that affect IPT acceptance in Redemption. Information collected from this research can be used by the Montserrado Health Management Team (MHMT) in order to increase IPTp program in Montserrado County. It can also guide other counties in related situations as it relates to their strategies around IPTp.

1.4 PURPOSE AND OBJECTIVES

The core objective of the study is to ascertain factors that influence the uptake of Intermittent Preventive Treatment (IPTp) of Malaria among pregnant women in the Redemption Hospital.

SPECIFIC OBJECTIVES

1. To assess the frequency of issues around availability of resources (drugs, cups, and clean drinking water) for implementing IPTp administration policy at the Redemption Hospital.
2. To determine the proportion of pregnant women with knowledge on the importance and required doses of IPTp.
3. To assess how attitudes and Practices of Health care workers influence the decisions of pregnant women to utilize IPTp services during AC visits.

1.5 RESEARCH QUESTIONS OR HYPOTHESES

For a quantitative study, the below questions were formulated to meet appropriate research questions:

1. How does the availability of clean water, drinking cups and drugs affect the number of doses of IPTp pregnant women receive/accept?
2. What is the level of knowledge of pregnant women on IPTp use for prevention of malaria in pregnancy and drug used in IPTp?
3. How do healthcare workers' attitudes and practices affect the number of doses of IPTp pregnant women receive/accept?

For a quantitative study, the below hypotheses were formulated:

Alternative: Perception of frequent stockouts of clean water, cups and necessary drugs are associated with reduced IPTp uptake.

Null: Perception of frequent stockouts of clean water, cups and necessary drugs are not associated with reduced IPTp uptake.

Alternative: Level of knowledge among pregnant women on IPTp is associated with IPTp uptake

Null: Level of knowledge among pregnant women on IPTp is not associated with IPTp uptake

Alternative: Perceptions of negative attitudes of healthcare workers towards pregnant women are associated with reduced IPTp uptake.

Null: Perceptions of negative attitudes of healthcare workers towards pregnant women are not associated with reduced IPTp uptake.

1.6 THEORETICAL SUPPORT AND/OR ASSUMPTIONS

It was assumed that women visiting ANC clinics when there are often stockouts of SP, clean water and clean cups, and/or where healthcare workers' attitudes are

sometimes rude towards patients would have less knowledge on SP and be more fearful of it than women not experiencing lack of materials or poor attitudes of healthcare workers. This assumption was informed by existing literature. Perception of frequent stockouts of clean water, cups and necessary drugs, level of knowledge among pregnant women and perceptions of negative attitudes of healthcare workers towards pregnant women have been researched severally.

Because of unavailability of SP as regimen for IPT, it was revealed that about 40% of pregnant women did not receive it during ANC visits according to a study carried out in Kibaha in Tanzania. Out of these women who did not receive SP during ANC visit, 40% of them did not swallow the SP tablet due to empty stomach and the sharing of drinking cups (Tarimo 2007). Additionally, it was revealed that women who visit ANC, only 79% were found to be qualified for IPT first dose while 27% received their second dose. It is also established that only 20% of pregnant women in African countries make use of SP which is far less than what is being recommended by WHO. However, the limited use of SP by African women is as a result of issues surrounding unavailability or acceptance of SP (Mubyazi *et al.*, 2008).

Another research conducted in Nigeria uncovered that about 23.9% of women who were pregnant and told about IPT provided the right description of IPTp when asked, however out of these pregnant women only 52.3% got a minimum of one SP dose while pregnant and 40% did not take the SP for fear of its effects on their pregnancy (Ehijie *et al.*, 2007). Another research that was carried out through qualitative approach in the Korogwe district found that poor attendance of ANC visits by pregnant women was as a result of poor insignificant healthcare services.

Other factors include waiting long at ANC service delivery point due to the poor handling of service by service providers, lack of trust in the healthcare providers during counseling periods, late opening hours of ANC services, nurses rude and unprofessional attitudes towards the pregnant women and high service delivery cost (Mboera *et al.*, 2005). There is a need for qualified, competent, trained and skillful ANC staff to be deployed at those ANC delivery points in order to regain the confidence of pregnant women who visit the ANC delivery units and to also increase ANC uptake in the rural settings (Mboera *et al.*, 2005).

Therefore, this research is necessary to find out whether perception of frequent stockouts of clean water, cups and necessary drugs, level of knowledge among pregnant women and perceptions of rude attitudes among healthcare workers tending to pregnant women are associated with reduced IPTp uptake.

1.7 SCOPE (LIMITATIONS AND DELIMITATIONS)

The sampling process that was used to sample pregnant women from Redemption Hospital was convenience sampling based on who attended ANC visits on the days the researcher was available to visit and this may bias the results if the women attending ANC during the dates/times of the research were not representative of the study population. Weather, transport, other logistical means are the limitations of the research.

The study took place in an urban community in Montserrado County. There is one health facility that was selected for this study which is: Redemption Hospital - New Kru Town Community, District #16. New Kru Town is in Monrovia on Bushrod Island (Wikipedia/LISGIS, 2014). New Kru Town constitutes the Montserrado-16 electoral

district and an estimated 84,399 residents live in 20,585 households (LISGIS 2014). The majority of the residents of the New Kru Town Community are fisher men and women and the remaining other are business people who are either owners of shops, stores or petty traders. This community has one of the biggest commercial centers called the 'Duala Market' which houses thousands of people from different parts of the country.

The New Kru Town Community have thirty-four (34) functional health facilities that render health services to people in and around the vicinity or borough, among the facilities include the Redemption Hospital (one of government's referral hospitals), thirty-three (33 Private Health Centers /clinics).

1.8 DEFINITION OF TERMS

Anaemia - A blood condition in which there are too few red blood cells or the red blood cells are deficient in haemoglobin (Haemoglobin level < 11g/dl = anaemic)

Antenatal Clinic (ANC) - A clinic dedicating to providing routine care to pregnant women.

Intermittent Preventive Treatment (IPT) - Drug given prophylactically to individuals at high risk of morbidity due to infection with malaria

Insecticide Treated Net (ITN) – A Bed net that has been treated with an insecticide

Malaria - It is defined as the presence in the peripheral or venous blood of asexual blood stage of Plasmodium, irrespective of species or symptoms.

Multigravidae - A pregnant woman who has had two or more pregnancies.

Coverage - A measure of IPT uptake, was defined as the percentage of the number of respondents interviewed that had received none, one, two or three doses of SP in pregnant women of 20 weeks and above.

Availability of drugs - A facility was considered to have drugs if the stock out did not exceed seven days in the past one month.

PMTCT-1 - Prevention of Mother to Child Transmission (PMTCT) category one means those pregnant who are HIV positive.

1.9 ORGANIZATIONS OF THE STUDY

This thesis was structured and structured into five chapters. Chapter one is considered the introductory section of the thesis which includes: introduction, background to the study, statement of the problem, significance of the study, etc. Chapter two is the examination of related literatures that are significant to the research while chapter three is the methodology outlining the research methods used, study design, target population and sample size and sampling technique, the instrument, and data collection procedure as well as the analysis procedure. For the final thesis chapter four will give detail on data presentation, interpretation, and discussion of the results and chapter five, which is the last part of the research work, include the summary, conclusions, and recommendations of the study.

CHAPTER TWO - LITERATURE REVIEW

2.0 INTRODUCTION

This chapter describes the review of different literatures relating to the topic under discussion. It pinpoints different themes from the various articles or literature reviewed which includes: epidemiological and clinical burden of malaria, impact of malaria in pregnancy, policies and strategies on IPTp implementation, IPTp implementation, knowledge and attitudes around IPTp, availability of visual aid and health education materials and availability of IPTp.

2.1 EPIDEMIOLOGICAL AND CLINICAL BURDEN OF MALARIA

Globally, an estimated 229 million cases of malaria and 409,000 deaths of malaria are reported each year (WHO, 2019). Clinical disease for malaria infections ranges from asymptomatic to severe, and is related to a range of risk factors. Specifically, many factors drive the morbidity and mortality due to malaria in pregnant women. Such factors include the immunity built due to previous exposure, her number of previous pregnancies, the term of the current pregnancy, co-morbidities, and what the intensity of malaria transmission is in her environment (Bouyou-Akotet *et al.*, 2003; Coll *et al.*, 2008).

The intensity of transmission and immune response of an infected person is influenced by the clinical progression of *P. falciparum* and other plasmodium species (Cheesbrough, 1987; Tutu 2003). Additionally, a person's immunity is maintained through continued exposure to malaria parasite(s). This may also be due to how malaria transmission in an area may be suitable or not. Where there is constant transmission and high levels of immunity, most malaria infections are asymptomatic (Sirima *et al.*, 2003; Desai *et al.*, 2007).

Additionally, in regions where the transmission of malaria is low and not stable, women with unsubstantial immunity are expected to be symptomatic when parasitaemic and stand a more risk of becoming diseased and may die as well (Mutabingwa *et al.*, 2005). It is commonly seen that women who are pregnant are specifically susceptible to the effects of malaria. Again, pregnant women are at a disadvantage of becoming infected with the malaria species *P. falciparum* than women who are not and once they are infected the gravity of the disease increases. Also, women with low parity specifically those who have had their first and second pregnancies have a high exposure rate to malaria (Mutabingwa *et al.*, 2005).

Several evidences were reviewed on the clinical consequences and burden of malaria in pregnancy. Results from most of the studies revealed that about 25 million women who are pregnant are at risk of *Plasmodium falciparum* infection each year, and one in four women presents evidence of placental infection at the time of delivery (Meghna D et al., 2007). It is established that *P. falciparum* infections at the time of pregnancy in Africa infrequently end with fever; therefore, remain unnoticed and untreated (Meghna D et al., 2007). Results from the study suggest that intervention trials are the best way possible preventive measures that could reduce infections such as severe maternal anaemia by 38%, low birthweight by 43%, and perinatal mortality by 27% among paucigravidae (Meghna D et al., 2007). However, low birth weight connected with malaria infection in pregnancy is anticipated to result in 100 000 infant dmortality in Africa every year. Although paucigravidae are most affected by malaria, the magnitudes for infants born to multigravid women in Africa may be greater than previously appreciated (Meghna D et al., 2007). This is because HIV increases the risk of malaria

and its adverse effects, particularly in multigravidae, and a recent observational studies that were conducted show that placental infection almost doubles the risk of malaria infection and morbidity in infants born to multigravidae (Meghna D et al., 2007).

Outside Africa, malaria infection rates in pregnant women are much lower but are more likely to cause severe disease, preterm births, and fetal loss. *Plasmodium vivax* is common in Asia and the Americas and, unlike *P. falciparum*, does not cytoadhere in the placenta, yet, is associated with maternal anaemia and low birthweight. The effect of infection in the first trimester, and the longer term effects of malaria beyond infancy, are largely unknown and may be substantial. Better estimates are also needed of the effects of malaria in pregnancy outside Africa, and on maternal morbidity and mortality in Africa (Meghna D et al., 2007). Global risk maps will allow better estimation of potential impact of successful control of malaria in pregnancy (Meghna D et al., 2007).

2.2 IMPACT OF MALARIA IN PREGNANCY

Malaria in pregnancy poses a serious burden and threat to people living in areas with either hot or warm climate in the world. There are millions of women living in high malaria transmission areas are found pregnant every year and most women reside in areas with apparently stable transmission of malaria (WHO 2004; Tagbor *et al.*, 2008). Moreover, malaria has a toll or devastating effects on the newborn infants; low birthweight (LBW) is a particularly dangerous effect and it has been associated with high rates of mortality among newborns and infants (Steketee et al., 2001; Guyatt and Snow, 2001; Murphy and Breman 2001).

Across malaria-endemic areas of Africa, LBW is about twice as likely among

women who have placental malaria compared to those who do not (Guyatt and Snow, 2004). Some researchers suggest that nearly 2% of LBW deliveries are attributable to malaria in pregnancy globally, with highest rates in sub-Saharan Africa (Steketee *et al.*, 2001; Guyatt and Snow, 2004). LBW due to malaria in pregnancy is more common for women during their first pregnancy than during subsequent pregnancies (Brabin *et al.*, 1999).

In terms of death toll, it is estimated that malaria induced LBW contributes to three deaths per 1,000 live births each year in Africa (Murphy and Breman, 2001). In some areas, it is also estimated that 11.4% of neonatal deaths and 5.7% of all infant deaths are due to malaria in pregnancy associated LBW (Guyatt and Snow, 2001). These figures translate to around 100,000 infant deaths (Guyatt and Snow, 2001). As a means of reducing the burden of malaria in pregnancy, chloroquine prophylaxis or intermittent preventive treatment of malaria have proven to be effective. In fact, risk of LBW was found to reduce by around 40% (Garner and Gülmezoglu, 2006).

As it relates to the impact of malaria infection at the end of pregnancy on infant deaths and morbidity, a study was conducted in Mozambique to adequately ascertain the severity of effects that this has on infants. The study relies on initial evidence and found out significantly the negative impact of malaria infection at the time of pregnancy on the danger to malaria in the infant (Azucena B *et al.*, 2011). Meanwhile, it also corroborates the unconvincing evidence on the negative consequence of maternal infection the survivability of infants' survival (Azucena B *et al.*, 2011).

A detailed placental examination was conducted with this research in order to uncover that placental infections occurring at the end of pregnancy are those most likely to have an impact on infants' survival (Azucena B et al., 2011). Little is identified of the actual impact of congenital malaria, defined as the presence of cord blood parasitemia, on the health of infant's in high malaria transmission areas other than an increased incidence of anemia a few months after birth (Azucena B et al., 2011). In addition, an alternative clarification for the increased risk of infant deaths associated with the presence of parasites at the end of pregnancy may be the occurrence of confusing causes that are independently related with both the risk of malaria and death. These may be due to poor socioeconomic, nutritional or other health-related causes (Azucena B et al., 2011).

2.3 POLICIES AND STRATEGIES ON IPT IMPLEMENTATION

The mortality and morbidity associated with malaria during pregnancy is extremely prevalent in widespread areas of sub-Saharan Africa including Liberia. Many countries in Africa adopted the policy of using intermittent preventative treatment to reduce burden. (Van Eijk et al 2011). The constant and frequent use of IPT with the recommended dose of SP reduces parasitaemia in the placental and increases birth outcomes (Van Eijk et al 2011).

Use of SP as IPTp followed a WHO recommendation (2004) that pregnant women in malaria endemic areas are to take at least two doses of SP as IPT (Ntirushwa, 2004). In 2012 WHO policy on the use of IPT in pregnancy with the use of SP was revised. The new or revised policy request that all women who becomes pregnant should take SP at every ANC visit up to the time they give birth. The supervision of the SP tablet should begin in the second trimester with each tablet taken a month apart (WHO, 2017). This

new timing as being recommended by WHO is important because it will enhance the uptake of IPT. Furthermore, this revised policy requires that pregnant women living in areas with either relative or high malaria transmission to take three dosages of SP (Francis Anto et al., 2019).

This method is aimed at administering a complete treatment dosage to women who are pregnant and make use of ANC visits to seek healthcare. Whether the pregnant woman has malaria or not, she must be given the SP during her ANC visit (WHO, 2017). This method as recommended by WHO has shown effectiveness in treating and preventing malaria during pregnancy, maternal anemia, neonatal death and low birth weight (Francis Anto et al., 2019).

In a quest to implement measures to ensure that 60% of pregnant women in malaria high transmission areas had access to effective prevention interventions by 2005 African government pledged in 2000 in Abuja, Nigeria. In addition to this strategy, ten years after the Abuja declaration, most malaria transmission countries (40 out of 47) in Sub-Saharan Africa had adopted IPT and ITNs for pregnant women (Van Eijk et al 2011).

Despite the target set in 2000 in Abuja to be reached in 2005, very few countries reached either the targets or their own policies. From the Abuja conference held in 2000, Liberia has effectuated her policy on the administration of insecticide treated nets (ITNs) to every pregnant woman that visit the ANC in support to the use of IPT-SP which in itself is gear towards combating malaria in pregnancy through prevention. As a way of achieving this target, Liberia revised her policy on malaria prophylaxis during the period of pregnancy.

This new policy calls for every pregnant woman to be given SP as IPT through the DOT (Ministry of Health, Revised Anti-Malaria Drug Policy for Liberia, 2008). Liberia, as signatory to the Abuja Declaration (2000), has been implementing prevention at all levels of the country through the National Malaria Strategic Plan (NMSP). The Ministry OF Health (MOH) and her partners (WHO, PMI, JPHIEGO, etc.) have been collaborating to ensure that key interventions are implemented to a successful level.

As a way of fighting against malaria during pregnancy and ensuring that women and children are free from malaria, Liberia formulated strategy called Liberia National Malaria Strategic Plan (2016- 2020) geared towards protecting the country's population specifically the most vulnerable group by 80% through malaria preventive measures. Also, within this policy it is expected that the Liberian populace should have universal access to ITNs by meeting a target of 100%. The conduct of mass campaigns every three years, distribution of nets to pregnant women who attend ANC, etc. are all methods to ensuring the target is met. According to the LNMSp report, 11 million ITNs were distributed between 2008-2018 through mass campaigns, ANC services, etc. and 2.9 million bought by PMI.

2.4 IPT IMPLEMENTATION

In addition, to fight malaria in high transmission areas including Liberia, implementation of IPT strategy is being undertaken and monitored at many health facilities. With all these interventions and strategy, it is estimated, however, that less than 5% of Sub-Saharan have access to effective malaria interventions and is especially worse in rural areas (RBM infosheet 4, 2010). Less than 20% of women living in four African countries make use of prophylactic drugs which appears to be close to the policy

recommended by WHO according to a survey carried out. From this research, it has shown that having access to ANC services doesn't necessarily mean an increase in IPT-SP as long quality of care, women's knowledge and attitudes towards SP remains an issue concern (Mubyazi *et al.*, 2008).

While a study conducted in Malawi evaluating IPT showed a decline in placental infection (32% to 23%) and in the number of low birth weight babies (23% to 10%), It also found that 75% of all pregnant women took advantage of IPT when offered (Van Eijk *et al.*, 2011). Several other studies viewed SP as harmful, suggesting that it caused miscarriages and side effect that included mouth sores, fatigue, fever, rashes and itchiness, however these studies suggested that although these perceptions exist, there were very few cases of adverse effects, and that these ideas were based on hearsay rather than personal experience (Mubyazi *et al.*, 2008).

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

2.5 KNOWLEDGE AND ATTITUDES AROUND IPTp

Despite buy-in at the national level through policy-making, individual-level factors influence uptake of preventative measures. Awareness and knowledge about

malaria in pregnancy and preventative measures have been shown to influence uptake (Ehijie *et al*, 2007). A study instituted in rural Nigeria (2009) has shown that 23.9% of women who were pregnant and heard about IPTp could give a better definition of IPT. Of all the women who were interviewed, 52.3% got at least one dose of SP during the time of pregnancy while 40% refused to take the SP tablet for fear that it will affect their pregnancy (Ehijie *et al*, 2007). A pregnant woman's knowledge around IPT subjects needs to be adequately addressed if IPT coverage should increase.

To achieve this, those providing the services, healthcare workers need to be properly trained so as to conduct proper education to pregnant women who attend ANC. Consequently, a study found that all interviewed staffs knew about the frequency for IPTp administration, knowledge on timing and the number of doses (frequency) of SP to be given during pregnancy. However, only 60% had knowledge on when to stop administering SP. Additionally, knowledge on the effects of SP was relatively low as only 36.7% of pregnant women interviewed knew all of the different side effects of the usage of SP, while 56.7% knew the important effects of taking SP during pregnancy (Antwi D G 2010).

It has been found that 75% of all pregnant women who accept IPTp took advantage of IPT when offered (Van Eijk *et al.*, 2011). In addition to side effects such as miscarriages, mouth sores, fatigue, fever, rashes and itchiness, several other studies found that women viewed SP as harmful. It can also be established that most of the pregnant women who were being talked to on issues surrounding IPT, very few spoke about adverse effects, this is due to hearsay rather than having their own personal experiences of the use of the SP tablet (Mubyazi *et al.*, 2008).

2.6 AVAILABILITY OF HEALTH EDUCATION MATERIALS

Research has shown that there has been limited impact on behavioral changes of pregnant women through the conduct of health education and messages on the importance of SP to residence within the community, hence has affected efforts in disease prevention and control in some parts of high malaria transmission areas (Tarimo, 2007). This limited impact is as a result of poor or ineffective ways messages are cut across especially in educational programs between systems put in place and those providing the services.

Proper, clear and adequate messages on IPT knowledge is vital, especially ensuring pregnant women are educated about IPT usage during pregnancy each time they go for ANC visit (Ehije *et al.*, 2007). Additionally, a research done in Tanzania has shown a drastic decline from 70% (2005) to 50% (2007) within facilities using posters at ANC with the intent of pointing out the benefits of the use of IPTp (Tarimo, 2007; Ehije *et al.*, 2007).

2.7 AVAILABILITY OF IPTp

A national survey that was conducted in Africa around 2007 revealed that low usage of IPT and ITNs had a gap with high attendance of ANC as was being insinuated. The results found out that about 25.6 million (25%) of pregnant women who attended ANC received at least a single dose while 19.8 million (77%) visited ANC a result from 31 countries. Moreover, the survey revealed that there was very low coverage of ANC in high malaria transmission areas. This is due to missing out on opportunities of giving out SP tablets to pregnant women who went for ANC visits (Ankileye *et al.*, 2009).

Additionally, the survey uncovers some reasons for this poor or low ANC coverage. Failure to give out clear messages about IPT in pregnancy particularly on the

time interval of SP administration, limited or no SP available at the ANC, little knowledge on IPT, late enrollment, irregular ANC visits etc. were some of the reasons (Tarimo 2007). A study done in the region of Kibaha district located in Tanzania, found out that approximately 40% of pregnant women who went for ANC visits because of stock out or SP not being available; 40% of them did not swallow the SP tablet as required because of empty stomach and the sharing of cups which in itself is hygienically wrong (Gross K et al 2011).

Additionally, a research conducted in the Kilombero valley further revealed that of those pregnant women who attended ANC and were qualified for their IPTp, only 79% got first dose and 27% given a second dose. While it is true that pregnant women started attending ANC late, but it was in line with the national guidelines which outlines that between 20-24 weeks and 28-32 weeks of gestation a woman should be given IPT (Mboera *et al.*, 2005).

However, the poor attendance of pregnant women to the ANC was as a result of poor healthcare services being provided. Waiting long hours before services are provided, poor handling of pregnant women who go for ANC etc. are some of the factors that contribute to low coverage of IPT. Other factors include lack of trust in healthcare providers on the issue of confidentiality, improper language usage on clients, increase in service cost and opening late are also reasons identified in the research conducted in Korogwe which led to poor ANC attendance (Mboera *et al.*, 2005).

CHAPTER THREE - METHODOLOGY

3.0 INTRODUCTION

This chapter describes the research methodology, description of the research design to be used; research setting, target population, sampling size and sampling strategy are also given. Research instruments to be used and the ethical issues relating to the study are also mentioned.

3.1 RESEARCH METHOD

This research was conducted using a quantitative method. This method was used to effectively assess the factors that influences uptake of IPT of malaria in pregnant women who attended ANC at the Redemption Hospital during September 2021.

The design under the research method is a descriptive cross-sectional survey because it deals with the nature of prevailing circumstances with an objective of defining or recognizing criteria for situations to be linked and knowing the association that occur between particular events. (Cohen, Manion and Morrison, 2000).

3.2 RESEARCH DESIGN

The design under the research method is a descriptive cross-sectional survey because it deals with the nature of prevailing circumstances with an objective of defining or recognizing criteria for situations to be linked and knowing the association that occur between particular events. (Cohen, Manion and Morrison, 2000). Survey research collected via a cross-sectional design involves collecting of data on a one- shot basis and therefore is inexpensive and effective. When conducted with the appropriate sample size and sampling strategy, it can be used to represent an extensive target population and

produce data that can be processed statistically (Cohen, Manion and Morrison, 2000).

Surveys are helpful for collecting information on thoughts and preferences, as well as awareness and practices. Descriptive surveys are often undertaken to gain insight into attitudes and values. For example, a survey could assess respondents' understandings for not taken their SP during pregnancy. In the case of the present study, patients' understanding and beliefs about the services they get from the hospital were desired.

3.3 TARGET POPULATION

According to Anothy Krugaer and Sokpe (2006), a study population reflects all of the people who are being targeted by the investigation, as defined by the study's aims/objectives. The population of the thesis was all pregnant women who utilize services at the ANC clinics at Redemption Hospital in Montserrado County.

3.4 SAMPLE AND SAMPLING TECHNIQUES

The target population was selected from the patients who received ANC services at the Redemption Hospital as it is considered a good sample frame for the study. Sample selection was based on utilization of Antenatal services. The numbers of pregnant women that we sought to include in the study based on an a priori sample size calculation was 250, as determined using the formula expressed below:

$$n_o = \frac{z^2 p (1-p)}{E^2}$$

E^2

n_o = the lowest sample size needed.

Z = confidence interval, which equals to 1.96 is parallel to standard normal deviation

P= Ratio of SP for IPT received by pregnant women

E = P is probable to be 5% of border error

Convenience sampling was done at the facility level to choose a single site for the research. Reason for selecting the above-mentioned facility was based on the fact that Redemption Hospital is government run hospital and is expected to have high ANC attendance and is also representative of the numerous health facilities located within the urban community/district. The number of patients seen at the Redemption Hospital during ANC per week was estimated to be 235. One key disadvantage of using this sampling method is the inability to generalize the results of the survey to the population as a whole.

3.5 DATA COLLECTION INSTRUMENT(S)

The instrument for data collection for this research was a well- structured questionnaire. The items determined was based on the research question of the study and consist of closed- ended questions. The questionnaire contained three different sets of questions: (1) a section on ANC clients' experiences with availability of material resources, like the drug, cups, clean water, (2) a section on ANC clients' experiences with healthcare workers, like the attitudes of the ANC staff towards patients, and (3) a section on ANC clients' understanding of the importance of IPTp and how many doses are needed). These sections aligned with the research objectives/questions. Questions were iteratively developed by the researcher; other questions were derived from pre-existing tools that examined a similar topic.

Ahead of data collection, the questionnaire was made available to expert in the field to determine its validity. Suggestions that were made were incorporated to refine the content and improve the questionnaire. Again, the questionnaires was pre-tested with

students to eliminate errors and ensure constant reliability. In order to clear all ambiguities, pre-testing was done with 10 individuals. Instructions that appear not clear to respondents was then restructured. The categories of people who were interviewed include pregnant women who visit the Goodwill Clinic. The reason for choosing this facility is that, it appears to have similar characteristics as the facility of concern.

An introduction letter was sought from ULSOPH and cover letter from the MOH through the CHO/DHO to introduce the exercise to the health facilities. The data collection exercise lasted for a period of two months; the selected facility was visited as many times judging from the fact that they are have heavy clients' workloads in order to obtain information from pregnant women who attend the Redemption Hospital. Meanwhile as a data collector and or researcher/investigator, visited the facility twice in a week; this is because pregnant women are scheduled on specific dates for ANC.

3.6 DATA COLLECTION PROCEDURE(S)

To facilitate data collection, an introduction letter was sought from ULSOPH and cover letter from the MOH through the County Health Officer and relevant District Health Officer to introduce the exercise to the health facility. The data collection exercise lasted for a period of one month; the selected facility was visited as many times judging from the fact that they are have heavy clients' workloads in order to obtain information from pregnant women who attend the Redemption Hospital. A data collector and/or the researcher/investigator visited the facility five times a week; this is because pregnant women don't have specific dates for ANC.

Quantifiable information from pregnant women was collected verbally using a questionnaire, as described in Section 3.5. Pregnant women were interviewed on different

days until the sample size was obtained.

3.7 DATA ANALYSIS PROCEDURE(S)

Analyses were undertaken to investigate the variables of interest, per the research questions. For the thesis research, a dependent variable of interest was knowledge about the number of IPTp doses that should be administered per pregnant woman, per WHO recommendations. Independent variables of interest included socio demographic features (age, level of education), knowledge of IPTp, perception of IPTp, availability of drugs, availability of clean water, supervision and monitoring of IPTp. Knowledge questions were assessed per different thresholds to characterize women as having high, moderate, or below knowledge about IPTp and other preventative measures for malaria.

Data was analyzed using Microsoft Office Excel 2007 and RStudio version 4.2.0. Data was summarized using frequency tables, means and standard deviations. A chi-square test analysis was used to assess the relationship between categorical variables; t-tests and analyses of variance were used to assess statistical relationship between categorical variables and continuous variables. Statistical significance was assumed when associations were found to have a $p\text{-value} < 0.05$.

3.8 ETHICAL CONSIDERATIONS

Ethical clearance for the study was obtained from the UL Graduate School ahead of data collection. Informed consent was obtained from all eligible participants before the questionnaire were administered. The purpose of the study was explained to participants and assured them of their confidentiality. The study was deemed to present low risk to participants. In addition to this, the intended data collection process was discussed with the management of Redemption Hospitals before the questionnaire administration started.

The questionnaire was read and interpreted to respondents who were not able to read nor write for their consent before the questionnaires was administered to them. Those who did not want to participate in the study were informed that no penalty or change in care would be experienced if they did not want to answer the questionnaire.

IJSER

CHAPTER FOUR

4.0 INTRODUCTION

This chapter deals with data collected on the field, its presentation and analysis in relation to the research objectives and questions.

4.1 Presentations of the Data

Here the data are presented in tabular form to address the three research questions/hypotheses driving the research. Interpretation is then provided in Section 4.2.

The first research question investigated was “How does the availability of clean water, drinking cups and drugs affect the number of doses of IPTp pregnant women receive/accept?”

Table 1. Association between availability of clean water, drinking cups and drugs and the number of doses of IPTp pregnant women receive/accept

	How many times during pregnancy a woman does need to swallow SP tablets at the ANC? (%)		
	Incorrect response (n=186)	Correct response \geq 3 doses (n=55)	P-value
Were you given clean water during your visit at the clinic?			<0.001
No, I did not need water to drink	51(27.4)	0(0.0)	
No, there was no clean water available	70(37.6)	43(78.2)	

Yes, there was clean water	65(34.9)	12(21.8)	
Have you taken your medication at the ANC on empty stomach?			0.134
Yes	3(1.6)	3(5.5)	
No	183(98.4)	52(94.5)	
Are there clean cups always at the clinic during your ANC visit?			0.040
Yes	28(15.1)	3(6.7)	
No	88(47.3)	36(80.0)	
Don't know	70(37.6)	6(13.3)	

Sources: Researcher Field Data, 2021

Next, the study aimed to consider, “What is the level of knowledge of pregnant women on IPTp use for prevention of malaria in pregnancy and drug used in IPTp?”

Table 2. Knowledge of pregnant women on IPT

Knowledge Questions	Frequency	Percentage
Have you ever heard of prevention of malaria during pregnancy?		
Yes	207	82.8
No	43	17.2
Total		100
What are the different ways used for prevention of Malaria in pregnancy that you		

know?		
Sleep under an insecticide treated net	181	77.2
Taking drugs	89	71.5
Mosquito repellent	96	75.6
Wear protective clothing especially at night	34	42.1
Clean your surrounding	18	15.0
Use mosquito coil	10	14.9
Don't know	9	3.6
What are the effects of malaria in pregnancy? (%)		
Can cause spontaneous abortion	55	35.8
Don't know	32	13.1
It can cause infection	9	3.7
It can dry the blood and make your skin hot	9	3.7
It can make you sick and affect the baby also	3	1.2
It makes me feel bad and want to throw out	3	1.2
It makes you feel weak and make your urine yellow	3	1.2
Sometimes it make the child go blind	9	3.7

Can cause anaemia	13	12.5
Can cause death	58	54.5
Can cause low birth weight	40	45.9
Can cause prematurity	37	39.6
Can make the child blind	10	8.9
It can make your heart hurt and makes you feel cold	3	2.7
It can make your skin hot	10	11.0
You will get sick	3	2.7
Do you think that SP is effective in preventing malaria in pregnancy?		
Yes	54	21.6
No	196	78.4
Total		100
What reasons make you think SP is not effective in IPT?		
Because I have to eat before I take it	9	10.9
Don't know	57	69.6
It has shown resistance in treating malaria	16	19.5
Total		100
Has anyone closer to you ever discouraged you to take IPT?		
Yes	45	18.7
No	196(81.3)	81.3
Total		100
What reasons were given you not to take IPT? (%)		

Don't know	18	33.8
It is not good to be taken by pregnant women	10	18.9
It will cause miscarriage	9	16.9
Use traditional medicines instead	3	5.7
How many times during pregnancy a woman does need to swallow SP tablets at the ANC? (%)		
Once	39	16.2
Twice	79	32.8
Thrice	37	15.4
Six times	18	7.5
Don't know	68	28.2
Total		100

Sources: *Researcher Field Data, 2021*

Lastly, the research sought to address, “How do healthcare workers’ attitudes and practices affect the number of doses of IPTp pregnant women receive/accept?”

Table 3. Association between the attitude and practices of healthcare workers on decisions of pregnant women to utilize IPTp services during ANC visits.

	What were your reasons for not taking SP? (%)		
	Willing (n=42)	Unwilling (n=208)	P-value

From your day to day experience and visit here, has any of the healthcare worker or staff acted rude on you?			<0.001
Yes	42(100.0)	0(0.00)	
No	0(0.00)	208(100.0)	
During your visit here, has there been a time where you waited long without any healthcare worker or staff catering to you?			0.2586
Yes	15(35.7)	27(12.9)	
No	55(50.8)	153(73.5)	

Sources: *Researcher Field Data, 2021*

4.2 Interpretation of the Data

A total of 250 respondents were interviewed from the Redemption Hospital. This reflects 100% of the targeted sample size.

Table 4. A table showing demographic characteristics of Respondents

Parameters	Frequency	Percentage
Age		
Below 18	44	17.6
19-29	120	48.0
30-29	80	32.0

Above 40	6	2.4
Total		100
Residence District		
Electoral District #2	2	0.8
Electoral District #7	18	7.2
Electoral District #8	1	0.4
Electoral District #9	10	4.0
Electoral District #10	3	1.2
Electoral District #11	2	0.8
Electoral District #12	16	6.4
Electoral District #13	12	4.8
Electoral District #14	9	3.6
Electoral District #15	31	12.4
Electoral District #16	110	44.0
Electoral District #17	36	14.4
Total		100
Education Status		
No education	63	25.2
Primary	62	24.8
Secondary	107	42.8
Tertiary	18	7.2
Total		100

Sources: Researcher Field Data, 2021

According to results presented in Table 4, it was observed that the mean age of

participating pregnant women was 25.8 years (SD 7.2) with age ranging from 13 to 45 years. About 43% (n=107) of pregnant women interviewed had acquired secondary education while 63 women or 25.2% of the sample reported no formal education. Most respondents were residents of Electoral District 16 (n=110, 44.0%). Some of the pregnant women came from as far as Electoral District 17 (n=36, 14.4%), Electoral District 15 (n=31, 12.4%), and Electoral District 12 (n=16, 6.4%).

The Socioeconomic activities of residents of District 16 is largely commercial. It is one of the largest commercial hubs in Montserrado where residents are engaged into petty businesses and it host the second referral hospital in Montserrado, Redemption Hospital which makes it a center of attraction.

Table 7. Knowledge of respondents around the use of IPT and other means to prevent malaria in pregnancy

Knowledge variable	CORRECT RESPONDENTS	
	FREQUENCY	PERCENTAGE
SP as the recommended drug for IPT in pregnancy	89	71.5
ITNs as an approach for malaria prevention in pregnancy	181	77.2
Mosquito repellent as an approach for malaria prevention in pregnancy	96	75.6
Wearing of protective clothing as an approach for malaria prevention in pregnancy	34	42.1

Use of mosquito coil as an approach for malaria prevention in pregnancy	10	14.9
Environmental cleanup as an approach for malaria prevention in pregnancy	18	15.0
Anemia as a consequence of malaria in pregnancy	44	19.8
Death as a consequence of malaria in pregnancy	58	54.5
Miscarriage or stillbirth as a consequence of malaria in pregnancy	55	35.8
Low birth weight as a consequence of malaria in pregnancy	40	45.9
Premature delivery as a consequence of malaria in pregnancy	37	39.6

Sources: Researcher Field Data, 2021

Tables 2 and 7 present on participants' knowledge around IPT and other preventative measures during pregnancy. Women who did give any accurate answers were considered as having below knowledge. For the purpose of this research, and bearing in mind the way in which understanding is transferred from the healthcare providers to their patients, pregnant women who were capable to provide up to 50% of the accurate answers were regarded as having sufficient understanding, and those who scored above 60% were regarded as having high knowledge. Scoring between 50%-60% was considered as having average knowledge.

The above table (Table 7) displays the sections of IPT knowledge amongst all antenatal women questioned; about 71.5% of the antenatal women understood that the IPT drug of choice was SP. Per the definitions provided, this was considered high knowledge of pregnant women and this offers evidence that health workers and others are working to increase their patients’ knowledge base. Other knowledge areas also scored very notable marks such as the use of LLINs for malaria prevention (77.2%) and the use of mosquito repellent for malaria prevention (75.6%). In contrast, there were below average scores in the area of anemia as an effect of malaria in pregnancy (19.8%).

Table 8. Frequency of use of different approach of the prevention of malaria

Approach	Frequency	Percentage
Coils	10	4.0%
Environment	18	7.2%
LLNS	181	72.4%
Protective clothes	15	6.0%
Repellent	26	10.4%
Total		100%

Sources: Researcher Field Data, 202

Among the 250 pregnant women who were questioned around the different approaches they desire to use for the prevention of malaria, 10(4.0%) mentioned they use mosquito coils while majority prefers the use of LLINs 181(72.4%). See Table 8.

Moreover, it was also found that majority of the respondents said that SP was not effective in preventing malaria (n=196, 78.4%) compared to those who said it was effective (n=54, 21.6%). Most of the pregnant women were found not to have a true answer about what makes SP not effective in preventing malaria (n=57, 69.5%), while 16 (19.5%) of them

said that poor effectiveness is since “It has shown resistance in treating malaria” and 9 (10.9%) said “Because I have to eat before I take it” (Table 2).

On the account of whether anyone closer to them had discouraged them in taking SP, majority responded No (n=196, 81.3%) compared to those who said Yes (n=45, 18.7%). Amongst those who responded yes, on aggregate their responses to the reasons given to discourage them from taking SP were “It is not good to be taken by pregnant women” (n=10, 18.9%), “It will cause miscarriage” (n=9, 16.9%), “Use traditional medicines instead” (n=3, 5.7%), and “Don’t know” (n=18, 33.8%) (Table 2).

Table 5. Availability of material resources at ANC

Questions about resource availability	Frequency	Percentage
What were the reasons for not taking SP at ANC during your visit?		
Complete the intake of SP	6	2.7
I am allergic to sulphur	15	6.7
It is available	3	1.3
Once it is available I will take it	38	17.0
SP does not treat malaria	19	8.5
SP was not available at the clinic	117	52.5
The medicine will affect my pregnancy	25	11.3
Total		100
Were you given clean water during		

your visit at the clinic?		
No, I did not need water to drink	51	20.4
No, there was no clean water available	122	48.8
Yes, there was clean water	77	30.8
Total		100
Have you taken your medication at the ANC on empty stomach?		
Yes	6	2.4
No	244	97.6
Are there clean cups always at the clinic during your ANC visit?		
Yes	31	12.4
No	133	53.2
Don't know	86	34.4
Total		100

Sources: *Researcher Field Data, 2021*

Table 5 presents reported availability of material resources such as cups, clean water and drugs at the ANC. Responses from majority of the clients shows that SP was unavailable at the ANC 117(52.5%) compared to those who said the medicine will affect my pregnancy 25(11.2%) and those who said I am allergic to sulphur 15(6.7%). It was found that there was no there was no clean water at the ANC based on majority of the pregnant women's responses that there was no clean water available 122(48.8%) compared to those who said there was clean water 77(30.8%).

On the account of taking medication on empty stomach at ANC, it was found that most of the pregnant women said no 244(97.6%) than those who said yes 6(2.4%). Also, it was found that there were no clean cups available at the ANC because majority of the clients responded that there were no clean cups 133(53.2%) compared to those who said clean cups were available 31(12.4%) and those who didn't know 86(34.4%). See Table 5.

Table 6. Descriptive Statistics on the Attitudes of Healthcare Workers towards Clients

Question	Frequency	Percentage
From your day to day experience and visit here, has any of the healthcare worker or staff acted rude on you?		
Yes	42	16.8
No	208	83.2
Total		100
During your visit here, has there been a time where you waited long without any healthcare worker or staff catering to you?		
Yes	70	28.0
No	180	72.0
Total		100

Sources: Researcher Field Data, 2021

From Table 6, attitudes of healthcare workers towards pregnant women was found to be good. Majority of the pregnant women interviewed when asked on whether any healthcare worker have acted rude on them during their ANC visits said No 208(83.2%) compared to those who said Yes 42(16.8%). On the assessment of whether clients had waited longer when attending ANC, majority of the responses from the pregnant women interviewed said No 180(72.0%) than those who said Yes 70(28.0%).

When asked how many times SP should be taken, women responded Twice 79(32.8%), Once 39(16.2%), Thrice 37(15.4%), Six times 18(7.5%) and those who said they Don't know 68(28.2%) (Table 2). To address the research questions, responses of pregnant women were grouped into two categories. Those who said they need to take SP once, twice and those who said they don't know were grouped as "Incorrect response", while those who said thrice and six times were grouped as "Correct response". Per Table 1, there were significant associations between whether pregnant women responded with the correct number of SP tablets a woman does need to swallow and whether clean water ($p < 0.001$) or clean cups ($p = 0.040$) were available for taking SP. In relations to whether they were given clean water during their ANC visit, women who knew the correct number of SP doses needed for IPTp were less likely to report that there was no clean water available at their ANC visits ($n=70, 37.6%$) than women who did know the correct number of SP doses for IPTp ($n=43, n=78.2%$).

On the account of whether pregnant women who visited the clinic during their ANC took medication on empty stomach, it was found that most women who did not know the correct number of SP doses needed for IPTp ($n=183, 98.4%$) and women who did know the correct number of SP doses ($n=52, 94.5%$) had not taken SP on an empty stomach. With this

there was no statistical association between SP on an empty stomach and awareness of the correct number of doses IPTp pregnant women should receive/accept (p-value = 0.134). See Table 1.

On the availability of clean cups at the clinic during ANC visit, 11% of women who incorrectly responded about SP doses said they had experienced availability of clean cups versus 1.2% of women who correctly responded about SP doses; 35.2% of women who incorrectly responded reported that there were no clean cups was found to be of higher proportion as compared to 14.2% of women who correctly responded. All other women indicated that they did not know if clean cups were available. There was statistical relationship between the availability of clean cups and the number of doses IPTp pregnant women answered should be received/accepted (p-value = 0.040). See Table 1.

Furthermore, there was a statistically significant association between healthcare workers' attitude and pregnant women's decisions to utilize IPTp services during ANC visit (p-value<0.001), whereas there was no statistically significant association between long wait times and pregnant women's decision to utilize IPTp services during ANC visit (p-value=0.259). See Table 3.

4.3 Discussions

On the account of pregnant women knowledge on IPT, it was found that majority of pregnant women interviewed were knowledgeable on the prevention of malaria during pregnancy 207(82.8%) compared to those who never had any knowledge on prevention of malaria during pregnancy 43(17.2%). This is as a result of the knowledge pregnant women got from their various homes plus what was they received during their ANC visits. Health workers needs to do better in educating pregnant women on the health effects of malaria, such as about anemia. A study by (Mubyazi G et al., 2005) "showed that there was inadequate

recognition that SP prescribed at the ANC facilities was for malaria preventive purposes, these findings are corroborated by the current status which clearly demonstrate a knowledge gap among the ANC clients.”

Clean water and clean cups availability appear to be a problem to IPT delivery as most antenatal women who were interviewed said that they carry or buy their own water when they come to the clinic in order to take the SP that is given them. Redemption Hospital did not provide water in a container with cups for mother to use free. Provision of clean cups and water should be recognized as a best practice because; using one cup by group of people with different health states is not the best. This validates the study carried out in Kibaha district in Tanzania, which “said about a third (40.0%) of the mothers did not receive SP for IPTp because of unavailability.” “Of those receiving, about a third (40.0%) did not swallow the tablets at the clinic because of empty stomach and sharing of water cup.” (Tarimo 2007).

Attitudes of healthcare workers towards pregnant women were found to be good. Many pregnant women interviewed when asked on whether any healthcare worker have acted rude on them during their ANC visits. Other work has found that healthcare workers’ attitudes affect ANC care. The study that was conducted by (Mboera et al., 2005) said factors such as panic of the lack of confidentiality at the consultation or inappropriate language of the nurses, inappropriate opening hours and/or unfair and unanticipated fees affect women’s attendance of ANC.

CHAPTER FIVE

5.0 INTRODUCTION

This section deals with the overall summary, conclusion and recommendations on the entire research work.

5.1 SUMMARY

This study found that 72.4% of the pregnant women who were interviewed were not knowledgeable know the correct number of SP doses needed for IPT in pregnancy. This suggests that pregnant women who visited the Redemption Hospital may not be effectively educated on the recommended dosage of IPTp.

In contrast, this study also discovered that there was a very high knowledge on the benefits of taking IPT by antenatal women who were interviewed. Nonetheless, having knowledge only is not sufficient as practicalizing such knowledge is another concern to be noted, a gap was seen when pregnant women were questioned around the drug of choice for IPT, about 71.5% knew that the drug is SP but 0% could not state SP as one of the approaches used in the prevention of malaria, and only 27.6% understood that SP has to be taken three or more times during pregnancy. The availability of SP remained to be an issue that affects the uptake of IPT at Redemption Hospital. Responses from pregnant women who were interviewed, 52.5% said SP was not available during their ANC visit.

This study also showed that healthcare workers attitudes towards pregnant women were generally good. Out of the 250 pregnant women who were interviewed, 83.2% responded that they were talked to nicely. Only a small proportion of the pregnant women complain of bad attitudes towards them 16.8%. On the account of waiting long before attending to or inappropriate opening hours, 72% said they were catered to on time and the

clinic opens very early; only 28% complained of waiting long hours before being attended to.

5.2 CONCLUSION

The unavailability of SP had shown to be an issue that affects the uptake of IPT at Redemption Hospital which needs to be taken seriously by the Ministry of Health through the NMCP in order to have a trickle down effect. The IPTp program had not been meeting its target of 85% as understanding of the antenatal women in IPT are significantly associated with the health worker attitudes and availability of resources needed to take the SP.

While most women indicated that healthcare workers treated them well, there was still an association between not being treated well and correct knowledge of IPTp dosage, suggesting that poor attitudes may be affecting quality of care or knowledge dissemination. Value-added supervising of IPTp services will improve replication of best practice from facility to facility to ensure quality service delivery, this will involve allocating resources or financial plan for obtaining water for DOT and medications in case of standard outs.

5.3 RECOMMENDATIONS

During the conduct of the study there was constant healthcare education or health talk by health workers at the Redemption Hospital, I therefore recommend the following:

1. Conduct of bi-monthly training sessions for health workers as a way of building their capacity towards a more robust approach in a more efficient administration of daily health education. This training will ensure an elevated understanding as pregnant women will be educated on a day-to-day basis. This will also help the clients acquire an enhanced chance understanding thus creating room for questions on IPTp services.
2. A regular monitoring and evaluation of IPT services must also be stressed to

guarantee continuous availability of drugs, clean water and clean cups for proper IPT management. Redemption Hospital should adapt international best practices from other government and private run Hospitals that have a budget for provision of safe and clean water; this report can be conveyed by the Montserrado County Health Team or the District Health Team. Better-quality supervising must likewise guarantee that healthcare personnel are continuously gaining simplified understanding for enhance delivery of their services.

3. Benefits of SP should be taught at all ANC during health education section in directive to guarantee that antenatal women know the correct number of doses that are required of them.

4. All staff should be motivated since they contribute to the greater number of source of information

5. An external monitoring Team should be set-up for the sole purpose of checking on the administration of SP. This will help to settle the issue of unavailability.

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APPENDIX A

Informed Consent Form Approved by the UL Graduate School IRB Informed Consent and Privacy Authorization Form

Protocol #: Version 1.0

Protocol Title: Factors influencing uptake of intermittent preventative treatment of malaria in pregnancy at the Redemption Hospital (September 2021)

Principal Investigator: Adeen T. Juwillie, Jr

Site: University of Liberia Graduate School, A.M Dogliotti campus, Redemption Hospital (New Kru Town) and Bensonville Hospital (Bensonville)

1. What you should know about this study:

The purpose of this form is to give you sufficient information to make an informed decision as to whether you will agree to be a participant in a research study. I am asking you to be in this study because you are a pregnant woman and meet the requirement of the research. This consent form explains the research study and your part in the study. Please read it carefully. Take as much time as you need. Ask me to explain any words or information that you do not understand. You are participating as a volunteer. If you join the study, you can change your mind later. You can decide not to take part or you can stop at any time. There will be no penalty or loss of benefits if you decide to stop the study.

2. What is this study about?

The study is about identifying factors that influencing uptake of intermittent preventative treatment of malaria in pregnancy at the Redemption Hospital.

3. How many people will be in this study?

We expect about 250 people to join the study.

4. What will happen if you join this study?

If you agree to be in this study, you will be part of those that will be answering the questionnaires which will last between 15 to 20 minutes. This will be done during your waiting time at the ANC visit.

5. What will happen to your personal information?

Your information will be kept confidential. All information collected will be stored on a password-protected computer, to which only the PI will have access for approximately 3 months. Your information will not be sold and is intended for research purposes only.

The only risk of allowing us to store your information would be an accidental relearn of your identity.

6. What are the risks or discomforts of the study?

We do not expect that there will be any risk or discomfort associated with participation in the study. The content of discussion is not about personal or otherwise sensitive matters.

However, if a participant feels discomfort at any time, he/she can choose to not answer a question or to leave the study.

7. Are there benefits to being in the study?

There is no direct benefit to you, but your participation will improve IPTp coverage among pregnant women in the Montserrado County and Liberia in general.

8. Will you be compensated for participation?

You will not be compensated for participating in the study.

9. How will your privacy be protected?

We will keep your study information private. All files with information that could identify you will be kept in locked cabinets or on secure computers. People responsible for making sure that the research is done properly may look at your study records. This might include people from the University of Liberia or collaborating institutions. All these people will also keep your identity private. Results from this study may be shared in the form of scientific publication or a report in order to inform future efforts at improving the translation of research into action.

10. What other things should you know about this research study?

a. What is an Ethics and Scientific Review Committee and how does it protect you?

The University of Liberia Institutional Review Board will review this study. In case any participant has doubt(s) reference to ethics concerns centered around to rights/welfare relative to the study, please contact the representative of the UL IRB: Jemee K Tegli: + 231777 583 774/ +231886 583 774; Email: jtegli@yahoo.com.

b. What do you do if you have questions about the study?

If you have questions about the study, you may contact the principal investigator, Adeen T. Juwillie, Jr- 0776861753/0880486228, adeenjuwillie25@gmail.com

c. What should you do if you are injured or ill as a result of being in this study?

We do not expect any harm from participating in this study. However, unforeseeable risks may be present. The investigator will refer you to higher authority or the University of Liberia IRB if you are hurt by being in this study.

d. What are your alternatives to participating in this study?

There is no alternative. You may choose to participate or not participate at any time. If you do not consent to the study, do not answer the interview questions.

Statement of Consent

I have read the information in this consent form including risks and possible benefits. All my questions about the research have been answered to my satisfaction. I understand that I am free to withdraw at any time without penalty or loss of benefits to which I am otherwise entitled. I consent to participate in the study.

SIGNATURE

Your signature below indicates your permission to take part in this research



Printed name of participant

Signature of participant

Date

Printed name of person obtaining consent

Signature of person obtaining consent

Date

APPENDIX B: LETTER OF INTRODUCTION OF RESEARCHER

My name is Adeen T. Juwillie, Jr, a student of the School of Public Health at the State run University, the University of Liberia in academic. I am here to collect information on IPTp use. This information is going to be used for research purpose only and it is expected that the outcome of the research will be used to improve IPTp coverage among pregnant women in the Montserrado County and Liberia in general.

I therefore ask for your time and coordination to partake in this interview that will not take much of your time. You have every right to accept or reject to participate in this interview and your decision is highly accepted.

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APPENDIX C: RESEARCH/DATA COLLECTION INSTRUMENT

QUESTIONNAIRE FOR ANC CLIENT AT THE REDEMPTION HOSPITAL IDENTIFIED

Questionnaire #.....

Interview Date:

Name of Health Facility:

District # -----

Introduction: I am a student of the School of Public Health at the State run University, the University of Liberia in academic. I am here to collect information on IPTp use. This information is going to be used for research purpose only and it is expected that the outcome of the research will be used to improve IPTp coverage among pregnant women in the Montserrado County and Liberia in general.

I therefore ask for your time and coordination to partake in this interview that will not take much of your time. You have every right to accept or reject to participate in this interview and your decision is highly accepted.

SECTION 1: SOCIO-DEMOGRAPHIC FACTORS

Instructions: Please read and carefully follow instructions under each section before interviewing the client. All the instructions are written in italics. Fill in the correct answer for questions 1 and 2 in this section. For the rest of the questions that follows, write the number of the corresponding answer in the box.

Note: Please do not read the **responses** for the client to choose the right answer. Read the question only and wait for the response, write the number in the box corresponding to the relevant answer. Each question has only one right answer.

1. Age []
2. Residence District []
3. Level of Education
 - A. Tertiary []
 - B. Secondary []
 - C. Primary []
 - D. No Education []



SECTION 2: KNOWLEDGE OF IPTp

- Have you ever heard of prevention of malaria during pregnancy?
 - Yes []
 - No []
- What are the different ways used for prevention of Malaria in pregnancy that you know?
 - Taking drugs []
 - Sleep under an insecticide treated net []

- Use mosquito repellent []
- Wear protective clothing, especially at night []
- Don't know []
- Other, specify
- If yes to previous question, what are the effects of malaria in pregnancy?
- Can cause anaemia []
- Can cause death []
- Can cause spontaneous abortion []
- Can cause low birth weight []
- Can cause prematurity []
- Don't know []
- Other, specify
- Do you think that SP is effective in preventing malaria in pregnancy?
- Yes []
- No []
- What reasons make you think SP is not effective in IPT?
- It has shown resistance in treating malaria []
- It is no longer used for malaria treatment []
- Because I have to eat before I take it []
- Other, specify
- Has anyone closer to you ever discouraged you to take IPT?
- Yes []
- No []

- What reasons were given you not to take IPT?
 - It will cause miscarriage []
 - Modern medicines are not good for the baby []
 - Use of traditional medicines instead []
 - Use other protective measures but avoid medicines []
 - Other, specify
- How many times during a pregnancy a woman does need to swallow SP tablets at the ANC?
 - A. Once []
 - B. Twice []
 - C. Thrice []
 - D. Don't Know []
 - E. Other, specify

SECTION 3: AVAILABILITY OF MATERIAL RESOURCES AT ANC

- What were the reasons for not taking SP at ANC during your visit?
 - A. SP was not available at the clinic []
 - B. SP does not treat malaria []
 - C. I am allergic to sulphur []
 - D. The medicine will affect my pregnancy []
 - E. Other, specify
- 13. Were you given clean water during your visit at the clinic?
 - A. Yes []
 - B. No []

14. Have you taken your medication at the ANC on empty stomach?

A. Yes []

B. No []

15. Are there clean cups always at the clinic during your ANC visit?

A. Yes []

B. No []

SECTION 4: ATTITUDES OF HEALTHCARE WORKERS TOWARDS CLIENTS

16. From your day to day experience and visit here, has any of the healthcare worker or staff acted rude to you?

A. Yes []

B. No []

17. During your visit here, has there been a time where you waited long without any healthcare worker or staff catering to you?

A. Yes []

B. No []

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