

**DETERMINATION OF LEVELS OF UTILIZATION AND ADHERENCE TO
INTERMITTENT PRESUMPTIVE TREATMENT WITH SULPHADOXINE
PYRIMETHAMINE AMONG PREGNANT WOMEN IN NDOLA URBAN
DISTRICT, ZAMBIA**

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A dissertation submitted in partial fulfillment of the requirements for the degree of
Master of Public Health (MPH)

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The University of Zambia
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DECLARATION

I Julia Shachakanza hereby declare that this dissertation is the product of my own work, and that it has not been previously submitted for a degree, diploma, or other qualification at this or another university.

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Objectives:

To determine levels of utilization and adherence to IPT with SP and the factors associated with utilization and adherence among pregnant women in Ndola Urban District.

Methodology:

A descriptive cross sectional study was used. The sample size comprised 350 client respondents aged 15 – 45 years from Ndola urban. Structured questionnaires, focus group discussions and checklists were used for data collection.

The Pearson's Chi square test was used to determine associations for contingency tables higher than 'two-by-two' tables. For 'two-by-two' tables with expected frequency greater than five, the Yates' corrected chi-square test was used to determine associations. When expected frequency was less than five in 'two-by-two' tables, Fishers Exact test was used. In order to determine independent factors associated with

ABSTRACT

Introduction

Malaria in pregnancy is a major public health problem in Zambia and in many other developing countries. Adverse outcomes include low birth weight and fetal death as well as maternal mortality and morbidity. The Ministry of Health put in a policy in 2003 for routine prophylaxis against malaria in pregnancy using three doses of Intermittent Presumptive Treatment (IPT) using Sulfadoxine Pyrimethamine (SP), which was to be given one month apart by Directly Observed Therapy (DOT). The target set was to have 90 percent of adherence to IPT-SP by all pregnant women.

In recent years, the region has experienced a dramatic resurgence of this disease and almost up to 450 million clinical cases of malaria recorded each year. Malaria is responsible for 30 – 40 percent of outpatient visits to health facilities, 10 – 20 percent of hospital admissions and 10 – 40 percent of severe cases in children under five years of age. Today malaria is the top killer disease in sub-Saharan Africa (MOH, 2000).

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To determine levels of utilization and adherence to IPT with SP and the factors associated with utilization and adherence among pregnant women in Ndola Urban District.

Methodology

A descriptive cross sectional study was used. The sample size comprised 350 client respondents aged 15 – 45 years from Ndola urban. Structured questionnaires, focus group discussions and checklists were used for data collection.

The Pearsons' Chi square test was used to determine associations for contingency tables higher than 'two-by-two' tables. For 'two-by-two' tables with expected frequency greater than five, the Yates' corrected chi-square test was used to determine associations. When expected frequency was less than five in 'two-by-two' tables, Fishers Exact test was used. In order to determine independent factors associated with

adherence, the forward logistic regression was used. The cut-off point for statistical significance was set at 5 percent. SPSS and EPI INFO soft wares were used for data processing and analysis.

Study findings

Out of 350 respondents the majority (58.3 percent) of the clients were aged 20 – 29 years, and married. In spite of most clients attaining secondary education only 8.6 percent had formal employment. About half of the clients (54 percent) were not knowledgeable on malaria transmission.

The utilization level of SP was very good (98.9 percent) while adherence was 77.4 percent. SP was available at most of the health facilities. About a third (38 percent) took SP from home unsupervised. The reasons for non-adherence to SP by clients were that the majority (49.4 percent) attended antenatal clinic twice or less; 27.8 percent were not given some of the doses of SP; and, 12.7 percent presented themselves to antenatal clinic late in the third trimester.

More than half of the clients (52.3 percent) that received SP said that they experienced some side effects after taking SP such as: body weakness (30.4 percent); felt sick (24.2 percent); and, dizziness (19.3 percent). The study results have shown that there were myths associated with SP such as: felt sick (42 percent); abortions (15 percent); body weakness (13 percent); and, dizziness (12 percent). In spite of these effects and myths/taboo there were no significant associations with adherence.

In multivariate analysis, respondents who could tell that a person has malaria were 7.59 times more likely to adhere to SP compared to clients who could not. Clients who started receiving SP at six months of pregnancy and below, were about five times more likely to adhere to SP than those who received SP after six months. Clients who perceived health care providers as being very good were 2.64 times more likely to adhere to IPT-SP than those that perceived them as being good.

Recommendations

For the Ministry of Health to achieve the target set of 90 percent adherence (MOH, 2005) health providers should intensify health education during the antenatal clinics to clients on the need to take SP as DOT, and reemphasize early attendance and regular antenatal visits at the ANC.

DEDICATION

To my mother, Margaret Shachakanza, my children Ngosa, Bwalya, Lubasi, and Kunda, my nephew Obby and my friend Arnold for their support throughout my studies.

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LIST OF ABBREVIATIONS

ANC	-	Antenatal Clinic
CBoH	-	Central Board of Health
CSO	-	Central Statistics Office
DHMT	-	District Health Management Team
DOT	-	Directly Observed Therapy of SP
EPI INFO	-	A word-processing, database and statistics program for Public Health
FGD(s)	-	Focus Group Discussion (s)
IPT	-	Intermittent Presumptive (Preventive) Treatment
ITN	-	Insecticide Treated Nets
LBW	-	Low Birth Weight
LMP	-	Last Menstrual Period
MOH	-	Ministry of Health
NCH	-	Ndola Central Hospital
NMCC	-	National Malaria Control Centre
RBCs	-	Red Blood Cells
RBM	-	Roll Back Malaria
SP	-	Sulfadoxine Pyrimethamine (Fansidar)
SPSS	-	Statistical Package for Social Sciences
WHO	-	World Health Organization
X ²	-	Chi Square

DEFINITION OF TERMS

1. **Adherence** - Following the guidelines for taking 3 doses of SP (Fansidar) in pregnancy.
2. **Antenatal booking** - First presentation by a pregnant woman to the ANC
3. **Clients** - Respondents
4. **Dependent variable** - Utilization and adherence to IPT –SP (Fansidar)
5. **Episodes** - Number of times a pregnant woman suffered from malaria
6. **Independent variables** - Factors identified and associated with non-adherence to IPT-SP (Fansidar)
7. **Researcher** - The one responsible for investigating a problem
8. **Utilization** - Making use of SP (Fansidar) in pregnancy

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Malaria accounts for 20 percent of maternal deaths in Zambia. Malaria has other effects on the pregnant woman, including increased anaemia and increased risk of mother to child transmission of Human Immune Virus (HIV). Malaria during pregnancy also places the fetus at greater risk for intrauterine fetal growth retardation and death, miscarriage (termination below 20 weeks gestation) and preterm delivery (between 20 and 37 weeks gestation) and low birth weight, perinatal and infant mortality (NMCC, CBoH, 2003).

In recent years, the region has experienced a dramatic resurgence of this disease and almost up to 450 million clinical cases of malaria recorded each year. Malaria is responsible for 30 – 40 percent of outpatient visits to health facilities, 10 – 20 percent of hospital admissions and 10 – 40 percent of severe cases in children under five years of age. Today malaria is the top killer disease in sub-Saharan Africa (MOH, 2000).

Malaria is defined as a protozoal infection of the genus *Plasmodium* transmitted through the bite of an infected mosquito belonging to the genus *Anopheles* (Park, 2005). The most common species that are clinically significant in causing the lethal form of malaria is *Plasmodium falciparum*. Other species are *P. malariae*, *P. vivax*, and *P. ovale*.

The signs and symptoms of Malaria include: fever, headache, sweats and chills, body pains and acute gastroenteritis. It may also include: nausea and vomiting, dehydration, diarrhoea and weakness. The study results conducted in Zambia have shown that women co-infected with HIV and malaria have a greater risk of preterm delivery and low birth weight than those with one or the other infection. HIV positive women need more than two doses of SP to adequately benefit from IPT (CBoH, 2001).

Pregnant women are particularly vulnerable to malaria as pregnancy reduces a woman's immunity to malaria infection and increases the risk of illness, severe anaemia and death. For the unborn child, maternal malaria increases the risk of spontaneous abortion, stillbirth, premature delivery and low birth weight, which is a cause of child mortality (CBoH, 2001).

In areas of epidemic or low (unstable) malaria transmission, adult women do not acquire any significant level of immunity and usually become ill when infected with *P. falciparum* malaria. In these areas maternal death may result either directly from severe malaria or indirectly from malaria related severe anaemia (CBoH, 2001).

In areas of high and moderate (stable) malaria transmission, most adult women develop enough immunity than even during pregnancy. Some *P. falciparum* infection is associated with malaria – related anaemia in the mother and with the presence of the parasites in the placenta, the resultant impairment of foetal nutrition contributing to LBW is a leading cause of poor infant survival and development. In areas of Africa with stable malaria transmission, *P. falciparum* infection during pregnancy is estimated to cause as many as 10 000 maternal deaths each year, four to eight percent of all LBW babies, and three to eight percent of all infant deaths (CBoH, 2001).

1.1.1 THE VECTOR

Malaria in humans is normally transmitted by the bite of a female Anopheles mosquito. Malaria is caused by four species namely: *p. falciparum*, *p. malariae*, *p. ovale* and *p. vivax*. The most serious one is *P. falciparum* which is lethal as it invades Red Blood Cells of all ages. *P. vivax* and *P. ovale* invade only young reticulocytes making the infection difficult to be destroyed by human immune system. *P. falciparum* has a natural tendency for soft tissues causing sequestration in the brain, kidneys and blood vessels consequently causing

extremely high levels of parasitaemia, and pronounced anaemia and cerebral malaria, factors that contribute to the severity of the disease. Drug resistance to *P. falciparum* has also been shown to develop faster than with other plasmodium strains. It is owing to these factors that malaria infection that is predominantly due to *P. falciparum* causes grave consequences particularly to the pregnant women and children under five owing to their physiologically depressed immune systems (CBoH, 2001).

In Zambia, 95 percent of malaria cases are caused by *P. falciparum*, considered very pernicious, with *P. malariae* comprising three percent and *P. ovale* two percent. *P. vivax*, less pernicious and more temperate in range, is very rare in Zambia. The other three types of malaria (*vivax*, *malariae*, and *ovale*) are generally less serious and are not life threatening (Sood, 2006).

1.1.2 NDOLA PICTURE

The Kafubu river and its many tributaries provide enough foci for the breeding of mosquitoes. This leads to an increase in the incidence of malaria even without rains.

DEMOGRAPHIC DATA

According to CSO and CBoH (2004), the Ndola district projected population for year 2005 was approximately 395 827 of which: -

20.0 % were under one year	-	79 165
4.0 % were under fives	-	15 833
22.0 % were women of child bearing age (15 – 45 years)	-	87 082
5.4 % were expected pregnancies	-	21 375
5.2 % were expected deliveries	-	20 583
4.95 % were expected live births	-	19 593
49.8 % were females (all ages)	-	197 122
50.2 % were males (all ages)	-	198 705

In Ndola Central Hospital the causes of admissions to the antenatal ward include malaria and other complications relating to pregnancy such as anaemia. In the first quarter of 2005 the incidence of malaria in pregnancy was 17.8 percent and 20.6 percent in the second quarter. This was an indication that the incidence of malaria was still high in relation to the preventive measures put in place. (Monthly Health Institution Admission Tally Sheets; Daily Returns of Discharges, and, Deaths Tally Sheet, 2005).

1.2 STATEMENT OF THE PROBLEM

Malaria infection during pregnancy is a major Public Health problem in tropical and subtropical regions of the world. In most endemic areas of the world, pregnant women are the main adult risk group for malaria. Malaria during pregnancy has been most widely evaluated in Africa south of the Sahara where 90 percent of the global burden occurs. The burden of malaria infection during pregnancy is caused chiefly by *P. falciparum*, the most common species in Africa. The impact of other three human malaria parasites (*P. vivax*, *P. malariae*, and *P. ovale*) is less clear. Every year at least 30 million pregnancies occur among women in malarious areas of Africa, most of whom reside in areas of relatively stable malaria transmission (Community Medicine Internet, 2005).

Malaria is endemic in both urban and rural areas in Zambia. Pregnant women are particularly at risk owing to the high transmission pattern in the country. Although *P. falciparum* infection during pregnancy does not always result in maternal illness, it may lead to placental malarial infection, and the outcomes, in both the mother and the fetus, particularly among prime-gravidae and HIV positive women (CBoH, 2001).

In high transmission areas, most of the cases of malaria in pregnancy do not have symptoms. A pregnant woman may not even know that she is infected. Malaria in pregnancy increases the chance of maternal anaemia, abortion, stillbirth, prematurity, intrauterine growth retardation and low birth weight (Steketee,

et.al., 1996). For this reason IPT is essential for all pregnant women. For those mothers who are allergic to SP, ITNs are recommended in the prevention of malaria in pregnancy.

Effective interventions to reduce the consequences of malaria in pregnancy are extremely important. These interventions include effective anti-malarial treatment of clinical malaria episodes, chemoprophylaxis, and the use of control measures such as Insecticide Treated Mosquito Nets (ITNs). In an effort to significantly reduce the malaria disease burden, the MOH has adopted the use of IPT (SP) in pregnant women who are to receive the SP three doses to prevent transmission to the unborn child and complications of malaria such as anaemia. (CBoH, 2002). Effective chemoprophylaxis during the second and third trimester of pregnancy greatly reduces the impact of malaria on low birth weight and episodes of clinical malaria. Intermittent Presumptive (Preventive) Treatment (IPT) of pregnant women is therefore recommended. IPT involves providing all pregnant women with preventive treatment doses of an effective antimalarial drug during routine antenatal clinic visits.

The rationale for providing prophylaxis during pregnancy is that effective chemoprophylaxis during the second and third trimester of pregnancy prevents or clears placental infection and greatly reduces the impact of malaria on low birth weight (LBW), and by implication, the contribution of malaria associated with LBW to infant mortality. Therefore, WHO (2003) recommends full antimalarial treatment of first attendance at an antenatal clinic, followed by regular chemoprophylaxis for pregnant women exposed to malaria.

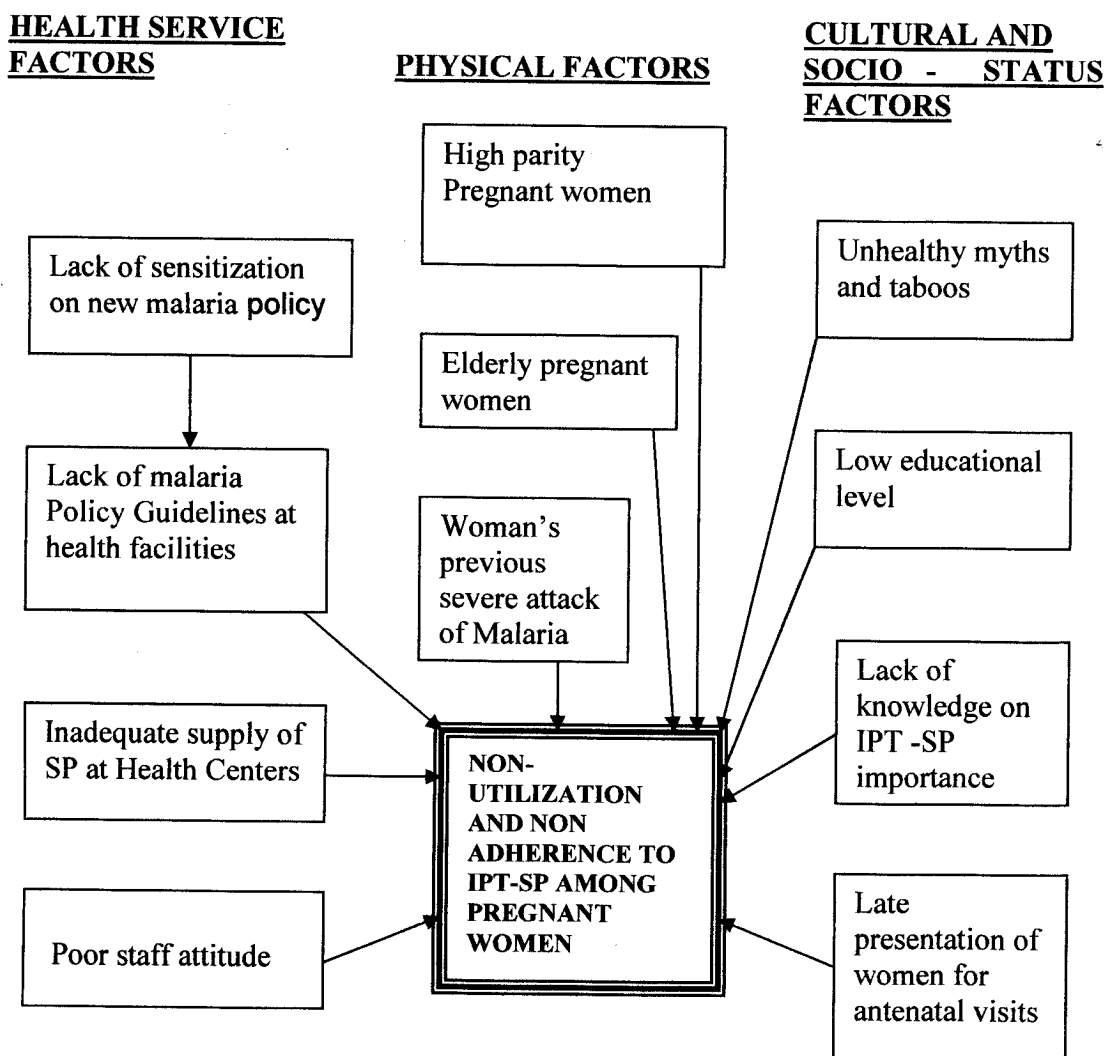
About 90 percent of pregnant women in Zambia have at least one antenatal visit during their pregnancy, providing a major opportunity for malaria prevention and other health issues facing pregnant and postpartum women (MOH, 2005). In Zambia this means monthly doses of SP during the second and third trimesters. This approach has been shown to be safe, inexpensive and effective.

According to MOH (2006) data, 56 percent of women deliver at home and do not come to the health facilities after six to seven months of pregnancy which predisposes them to default in adhering to SP. It also means that there is no follow up of those who miss those doses.

1.3 ANALYTICAL FRAMEWORK

In order to guide this study, a conceptual framework has been developed from the international literature review and is summarized in the figure below:

Figure 1: CONCEPTUAL FRAMEWORK: DETERMINATION OF LEVELS OF UTILIZATION AND ADHERENCE TO IPT - SP



1.4 JUSTIFICATION OF THE STUDY

Malaria in pregnant women contributes to the high rates of maternal and infant mortality in Zambia. Pregnant women are more likely to get malaria because their immunity is reduced during pregnancy. If they do get malaria, it can be severe. They can also have malaria without any symptoms or visible signs. Early and correct treatment of malaria in pregnant women is important (WHO, 2005).

Malaria directly leads to maternal death, through severe malaria and indirectly by causing postpartum haemorrhage, abortion or still birth. It is also a major contributor to low birth weight and premature delivery. The global distribution of per capita gross domestic product shows a striking correlation between malaria and poverty, and malaria-endemic countries also have lower rates of economic growth. There are multiple channels by which malaria impedes development, including effects on fertility, population growth, saving and investment, worker productivity, absenteeism, premature mortality and medical costs (Sachs and Malaney, 2002).

In 2003, Zambia introduced IPT for pregnant women to mitigate the effects of malaria in pregnancy. The IPT of three doses of SP (Fansidar) is to be taken once per month apart in the second and third trimester of pregnancy by directly observed therapy (DOT) in antenatal clinics. The target was to have at least 90% of all women taking all three doses of IPT (MOH, 2005).

SP has been proven safe for use in women in the second and third trimester of pregnancy. Large-scale usage has demonstrated safety and efficacy in pregnant women (NMCC, 2003). Under the new approach of SP, every pregnant woman in high malaria transmission area is assumed to have malaria, regardless of whether she has any symptoms, and is treated with SP (Fansidar). This has been shown to reduce the amount of malaria in the placenta, reduce anaemia, and to improve birth outcomes by reducing low birth weight.

Studies on the levels of utilization and adherence to IPT-SP have not yet been conducted in Ndola. Therefore, the researcher wishes to determine the levels of utilization and adherence to IPT in the prevention of malaria and the factors associated with utilization and adherence to IPT-SP among pregnant women in Ndola Urban District.

1.5 OBJECTIVES

1.5.1 GENERAL OBJECTIVES

1. To determine the levels of utilization and adherence to IPT-SP in the prevention of malaria among pregnant women in Ndola Urban District.
2. To determine factors associated with adherence to IPT-SP.

1.5.2 SPECIFIC OBJECTIVES

1. To establish the levels of utilization and adherence to IPT-SP.
2. To determine the association between availability, acceptability and adherence to IPT-SP
3. To determine factors associated with utilization and adherence to IPT-SP
4. To determine the association between episodes of malaria in pregnancy and adherence to IPT-SP.
5. To make recommendations to the policy makers.

1.6 RESEARCH QUESTIONS

1. What are the levels of utilization of IPT-SP among pregnant women in Ndola Urban District?
2. Are the pregnant women adhering to IPT-SP ?
3. Are there any barriers to utilization and adherence to IPT-SP?

1.7 STATEMENT OF HYPOTHESIS

Null hypothesis

Pregnant women do not adhere to IPT-SP due to lack of knowledge on the importance of taking SP in pregnancy.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The disease burden

Malaria is one of the most important causes of morbidity and mortality in the world, and remains not only a major cause of much suffering and death, but also the cause of many social and economic problems. Malaria causes over a million deaths each year, and more than 90 percent of these occur in Africa south of Sahara (WHO, 1993).

In recent years, the region has experienced a dramatic resurgence of this disease and almost up to 450 million clinical cases of malaria recorded each year. Malaria is responsible for 30 – 40 percent of outpatient visits to health facilities, 10 – 20 percent of hospital admissions and 10 – 40 percent of severe cases in children under five years of age. Today malaria is the top killer disease in sub-Saharan Africa (MOH, 2000).

In much of sub-Saharan Africa, malaria has been and remains a major cause of mortality in Ghana. It regularly accounts for approximately 30 – 50 percent of all out patient attendances. The diagnosis and treatment at health facility level in most cases is presumptive due to limited or non-available laboratory facilities. Malaria epidemiological studies in the Dangme West of the District between 1992 and 1994 by Noguchi Institute for Medical Research found that malaria transmission occurred year round, but with more pronounced seasonal variation in the coastal savannah area compared with the more inland forest like areas.

Tulu (1993), reported that malaria in Ethiopia was at the forefront among the health problems of the country due to climatic geographical factors. The disease occurred in different parts of the country in epidemic form. About 75 percent of the total area was estimated to be malarious with 65 percent of the total population, 40 million people, being at risk of infection. Community perception

relating to causation, transmission, prevention and treatment were the main socio – cultural factors that influenced malaria control. In addition, incorrect beliefs or inappropriate behaviour could interfere with the effectiveness of a control measure, such as vector control or chemotherapy (Agyepong, 1992).

A research study done in the rural eastern area of Gambia by Okoko *et.al.*, (2002), showed that malaria infection in pregnant women increased the risks of mother and baby. Every year about 24 million African women became pregnant in areas where the risk of malaria was high. They are more likely than other adults to become infected and this increases the risk of poor pregnant outcome. The study involved 313 mothers and their babies at Bansang Hospital in the rural eastern area of Gambia. None of the women were taking drugs to prevent malaria infection. The study revealed that the mean age of these pregnant women was 23.7 years. The overall prevalence of placental malaria infection was 51 percent. Women were most susceptible to malaria infection in their first pregnancy. The study also revealed that malaria infection of the placenta was associated with premature delivery, babies are four times more likely to have a low-birth weight (LBW), the average reduction in weight was 320 g and placental malaria also doubles the risk of still birth delivery.

2.2 Control and Prevention of the disease

At the first African summit on malaria in Abuja, Nigeria in 2000, African Heads of States were committed to providing effective malaria interventions to at least 60 percent of pregnant women by the year 2005. To achieve this goal, several challenges were to be overcome: delivery of malaria interventions through antenatal clinics in Africa needed to be widespread; pregnant women who did not attend antenatal clinics, or, who attended only for the first time and late during pregnancy needed to be reached.

The theme for the African Malaria Day in 2003 was “Insecticide Treated Nets and effective Malaria Treatment for pregnant women and young children by 2005.”

Malaria experts at the International Consultation meeting held from 25th to 27th October 2000, in Geneva on the theme “Malaria Diagnostics at the Turn of the Century”, emphasized that clinical diagnosis alone, the most widely used diagnostic tool, is unreliable because the symptoms of malaria are non-specific, overlapping with other febrile diseases. This results in antimalaria treatment of many patients without malaria, leaving them untreated for the true cause of their illness. Laboratory confirmation of clinical diagnosis is always desirable (except in areas of high transmission where laboratory diagnosis is confounded by the prevalence of circulating blood parasites in individuals without symptoms) (UNDP, World Bank, WHO, 2002).

Within the Roll Back Malaria (RBM) global partnership, WHO works with governmental, non-Governmental, bilateral and donor agencies to overcome challenges, meet the Abuja goal and reduce the burden of malaria in pregnancy. The RBM partnership with the ‘Making Pregnancy Safer Initiative’, brought new emphasis to the burden of malaria control efforts. The RBM aims to halve women’s malaria burden by 2010. However, there remain obstacles to implementing effective programmes and reaching women who will benefit the most from them, particularly high-risk adolescents in their first pregnancies. Many women in Africa lack access to effective tools as ITNs, especially in remote areas. Delivery of cost-effective malaria prevention to pregnant women would require: -

- Increased awareness of the problems among communities most affected by malaria;
- Integration of malaria control tools with other health programmes targeted to pregnant women and new born.

- Strengthened antenatal care systems and involvement of traditional birth attendants where they are part of health service delivery; and,
- Financial investment.

The prize for doing so will be safer pregnancies and a reduction in newborn deaths in these settings.

The Malaria control program in Zambia is rolling out a packet of interventions to reduce the burden of malaria in pregnancy. During pregnancy, women have decreased resistance to malaria. Also a pregnant woman may not even know she is infected; most cases are asymptomatic. A woman may test negative for peripheral parasitaemia but still have serious placental infection that can increase her child's chance of death. Zambian women are the main adult group at risk (Sood, 2006).

About two-thirds of pregnant women in sub-Saharan Africa attend antenatal clinics at least once during pregnancy, presenting a major opportunity to prevent and treat malaria. The aim of "Making Pregnancy Safer" package was to ensure that IPT was given to pregnant women as part of their routine antenatal care infrastructure. This strategy existed as an integral part of the "Making Pregnancy Safer" initiative, which aimed at strengthening antenatal services and providing measures, treatment, care and counseling to improve all aspects of health in pregnant women and newborns (WHO, 2005).

2.3 Efficacy of IPT – SP

A study done in Malawi showed no evidence that SP taken by the mother during pregnancy was harmful to the newborn. The results of this investigation, coupled with those from a study on the efficacy of SP in pregnant Malawian women, provided strong evidence that intermittent treatment with SP during pregnancy was safe and efficacious for the prevention of placental malaria in pregnant primigravidae and multigravidae women in sub-Saharan Africa (Shultz, 1993). While two doses of SP provided sufficient protection in HIV negative women

even in this very high *P. falciparum* transmission area, HIV positive women required at least three doses of SP to sufficiently clear their infections.

2.4 Accessibility, availability, acceptability and utilization of IPT

A study done by Yeung and White (2005), on “How do Patients Use Antimalarial Drugs? A Review of the Evidence”, revealed that patient adherence was a major determinant of the therapeutic response to antimalarial drugs, as most treatments were taken at home without medical supervision. The study also showed that adherence was generally better when treatments were effective, and was improved by interventions focusing on provider knowledge and behaviour, packaging and provision of correct dosages.

The Malawi National Malaria Control Programme established by the Ministry of Health and Population (MOHP) in 1997 implemented a policy that all pregnant women were to receive two doses of SP. This was known as the National Malaria Policy. According to the guidelines, the first dose was to be given “during the first antenatal visit occurring after the first trimester of pregnancy is complete”, and the second dose “at the beginning of the third trimester (between 28 and 34 weeks)” (MOHP, 1997).

Several studies were conducted in Malawi to determine the proportion of women receiving IPT–SP according to the policy guidelines. In Blantyre a random sample of 1080 households yielded 391 pregnant women, of whom 76 percent had taken their first dose of IPT–SP, but only 37 percent took the second dose. This low administration of two doses of IPT–SP occurred despite 88 percent of women reporting attendance at two or more antenatal visits during their pregnancy, and 87 percent reporting their first visit attendance during the first or second trimester of pregnancy (Holtz *et.al.*, 2004). Many of the women interviewed knew of the dangers of malaria in pregnancy and of the importance and benefits of taking IPT.

A second facility - based survey was conducted by Ashwood-Smith et.al., (2002) between May and June 2001 at Queen Elizabeth Central Hospital in southern Malawi (Blantyre) in order to determine the level of implementation of the national IPT-SP policy and to explore factors affecting that implementation. The survey demonstrated lower proportions of SP use; 51 percent of women received one dose, 14 percent received two doses, and 35 percent received no SP (n =301). Reasons provided by the author for the low uptake of SP were; - inadequate drug availability, late presentation of women for antenatal clinic visits, some staff members not following the malaria policy guidelines accurately and some cultural beliefs.

A study conducted by Ashwood-Smith (2002) in Blantyre, Malawi on Availability and Use of Sulphadoxine-Pyrimethamine in pregnancy in Blantyre, Malawi revealed that the mean timing of the first SP was at 22.8 weeks of gestation; and the second SP dose was 31.1 weeks gestation. There was a strong association between first SP dose and timing of first ANC visit. There was an equally strong association between timing of second SP dose and the second ANC visit.

In West Kenya a Demographic and Health Survey was conducted by National Council for Population and Development, Office of the Vice-President and Ministry of Planning and Population Development, (2003). The data was collected from different groups of pregnant women. These were women who had case management for malaria illness and women protected by IPT with SP. The groups protected with SP had higher mean blood haemoglobin levels than those in the malaria group. In addition the groups protected with SP had lower incidence rates of maternal parasitaemia and placental parasitaemia compared to women seen with malaria illness, and fewer low birth weight babies. Parasitaemia (in peripheral, placental, or cord blood) was defined as the presence of asexual stage parasites in thick smears. The study also revealed that the incidence of low birth weight newborns among those not protected with SP

was 14 percent. The conclusion was that IPT does offer some protection from the adverse consequences of malaria during pregnancy (National Council for Population and Development, 1994).

A study conducted by Parise *et.al.*, (1996) in Kisumu District in Western Kenya revealed that overall, 1.9 percent and 0.3 percent of the women reported adverse drug reactions after the first and subsequent doses respectively. The adverse effects included nausea, vomiting, rash, pruritis, and fatigue. These reactions had been resolved by the time of follow-up.

2.5 Zambian situation on use of IPT

A study conducted by Sikazwe (2003) in Lusaka Urban, Zambia revealed 80 percent of the respondents' perceived malaria as a problem, 52.7 percent described malaria as a very serious problem, 30.4 percent described malaria as a serious disease and the remaining 17 percent said malaria was not a serious disease. Despite their perception of malaria being a serious problem as well as the documented fact that it is a very prevalent problem, 87 percent of the respondents believed that malaria was preventable. In spite of the high levels of knowledge of preventive measures, the actual preventive practice is low.

A rapid assessment done by the National Malaria Control Center (2003) in Lusaka and Chipata revealed that there were misconceptions about use of SP in pregnancy such as: 'could only take SP once every six months; and, that; it could not be mixed with any other drug' 'was too strong for young children, and, pregnant women', 'had too many side effects' 'caused miscarriages' and, that; breast feeding women should not take SP as the baby would suck the drug and die'. These misconceptions were widespread and could undermine efforts to control malaria during pregnancy. In addition the misconceptions were scaring the providers from prescribing, and, preventing pregnant women from taking SP.

The majority of these pregnant women come from a low socio – economic background and shanty compounds who are poverty stricken with low nutritional status. If care is not taken, SP in turn could further deteriorate the recipients' situation. According to MOH (2006) data, 56 percent of women deliver at home and do not come to the health facilities after six to seven months of pregnancy which makes them default in adhering to SP. It also means that there is no follow up of those who miss these doses.

A study conducted by Sood (2006) in Zambia revealed that the poor suffer more since they are often at greater risk of infection and of severe disease because of lack of information about what causes malaria and about how to prevent and treat it. Also because measures to prevent and treat it were not physically or financially accessible.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Variables of interest

3.1.1 Independent variables

- Providers' attitudes
- Education level of pregnant women
- Knowledge of pregnant women on importance of IPT
- Availability of the SP in health facilities
- Acceptability of these services
- Myths and taboos
- Prevalence of malaria among pregnant women on IPT-SP

3.1.2 Dependent variable

Utilization and adherence to IPT by pregnant women

3.2 Study design

A descriptive cross sectional design was used in the study. Both qualitative and quantitative data was collected. Qualitative data was collected from the four health facilities through FGDs. A total of eight focus group discussions were conducted. The quantitative data was collected from the total number of 350 respondents. Structured questionnaire was used to collect the data from the pregnant women in their ninth month and those who had delivered in labour ward and postnatal wards. A checklist was also used to assess availability of SP at the health facilities.

3.3 Study setting

The study was conducted in Ndola Urban District which is divided into three zones namely; southern, northern and central. The health facilities from these zones were selected by simple random sampling to avoid

biasness and to ensure that all the zones were represented. The health facilities selected were Chipokota Mayamba, Twapia, New Masala and, Ndola Central Hospital.

3.4 Study units

Pregnant women between 15 and 45 years in their ninth month and those who had delivered after their ninth month of gestation.

3.5 Inclusion criteria

The study population included women of childbearing age who were nine months pregnant and those who had delivered at nine months of pregnancy and attended ANC in Ndola Urban District.

3.6 Exclusion criteria

Women who delivered before nine months of pregnancy; the young, and, older women who were outside childbearing age (15 – 45 years) were not part of the study. Visiting women to Ndola Urban were also not included.

3.7 Sample Size

The sample size was arrived at using the formula below: -

$$n = \frac{z^2 PQ}{d^2}$$

z being 1.96 at alpha 0.05

d being the error level (5%)

P being prevalence of adherence (p = 40% for pretest)

N being total population

Q being 100 – P

Confidence level of 95 Percent

Response rate of 90 percent

$$n = \frac{1.96^2 (40 \times 60)}{25}$$

$$n = \frac{9219.84}{25} = \frac{9604}{25}$$

$$n = 369$$

$$\text{Sample size (n)} = \frac{n}{\frac{1+n}{N}}$$

$$= \frac{369}{\frac{1+369}{1477}} = \frac{369}{1.25} = 295$$

$$= 90\% \text{ response rate} = \frac{295}{0.9} = 327$$

Therefore, **n = 350**

$$n_1 (\text{Twapia}) = \frac{137}{1477} \times 350 = 33$$

$$n_2 (\text{New Masala}) = \frac{504}{1477} \times 350 = 119$$

$$n_3 (\text{NCH}) = \frac{573}{1477} \times 350 = 136$$

$$n_4 (\text{Chipokota Mayamba}) = \frac{263}{1477} \times 350 = 62$$

3.8 Sample selection

A simple random sampling technique was used to select the four health facilities among the eight delivery health facilities in Ndola namely; Chipokota Mayamba, Twapia, New Masala and Ndola Central Hospital. A convenient sample of 350 of the pregnant women in their ninth month and those who had delivered after the ninth month of pregnancy were selected in order to reach the optimum sample size required.

3.9 Data collection

Data collection was carried out over a period of eight weeks starting from the third week of July to the third week of September, 2006. During data collection at the end of each day, the researcher went through the filled in questionnaires to ensure that all the information was properly collected and recorded. The study was conducted by administering a structured interview schedule with both open and closed ended questions among the sampled clients to the respondents and checked with their antenatal cards against their responses. Eight focus group discussions were conducted in the four randomly sampled health facilities. A total number of 10 participants were selected from each group and the discussions lasted for about 30 minutes. The language used was Bemba. Availability of SP was assessed by checking pharmacy stocks and using simple calculations to predict drug requirements according to the patient load expected before the date of the next delivery of the drug. This was compared with drugs needed against the stock actually available. The research assistants were trained nurses from the health facilities and were trained by the principal investigator for a period of two days.

3.10 Data Processing, analysis and presentation of findings

The data was summarized and presented in the form of tables such as 'two-by-two' tables, pie chart, and bar charts to facilitate understanding. The Pearsons' Chi-square test was used to determine associations for contingency tables higher than 'two-by-two' tables. For 'two-by-two' tables with expected frequency greater than five the Yates' corrected chi-square test was used to determine associations. When expected frequency was less than five in 'two-by-two' tables, Fishers Exact test was used. In order to determine independent factors associated with adherence, the forward logistic regression was used. The cut-off point for statistical significance was set at five percent.

3.11 Ethical consideration

Approval was obtained from the University of Zambia, Research Ethics Committee. Permission was sought from the Ndola Urban DHMT, Provincial Health Director's Office, and Ndola Central Hospital Board of Management. All respondents gave written consents after full explanation on the purpose of the study. The respondents were assured of confidentiality and non-persecution arising from their responses.

3.12 Pilot Study

A pilot study was conducted in one of the health facilities not included in the main research and that was Chipulukusu to test the validity and reliability of the tools used. Unnecessary questions were deleted and some questions reformulated. The study consisted of a sample of ten pregnant women in their ninth month and those who had delivered at nine months of gestation.

3.13 Limitations of the study

The ideal situation was to collect data from all the antenatal and delivery health facilities in Ndola urban and rural districts. This was hindered by time, logistics and financial limitations. Ndola was selected for the research because it was convenient to do so.

3.14 Staffing and work plan

Two research assistants were recruited to assist with data collection. These were trained with skills and knowledge needed for the exercise. Supervisors provided technical guidance to ensure smooth running of the study. Technical support for data processing and analysis was sought from a competent statistician.

CHAPTER FOUR

4.0 FINDINGS

The study findings of client respondents are presented in Section A (quantitative data). Section B contains results from qualitative data (FGD).

SECTION A - QUANTITATIVE DATA

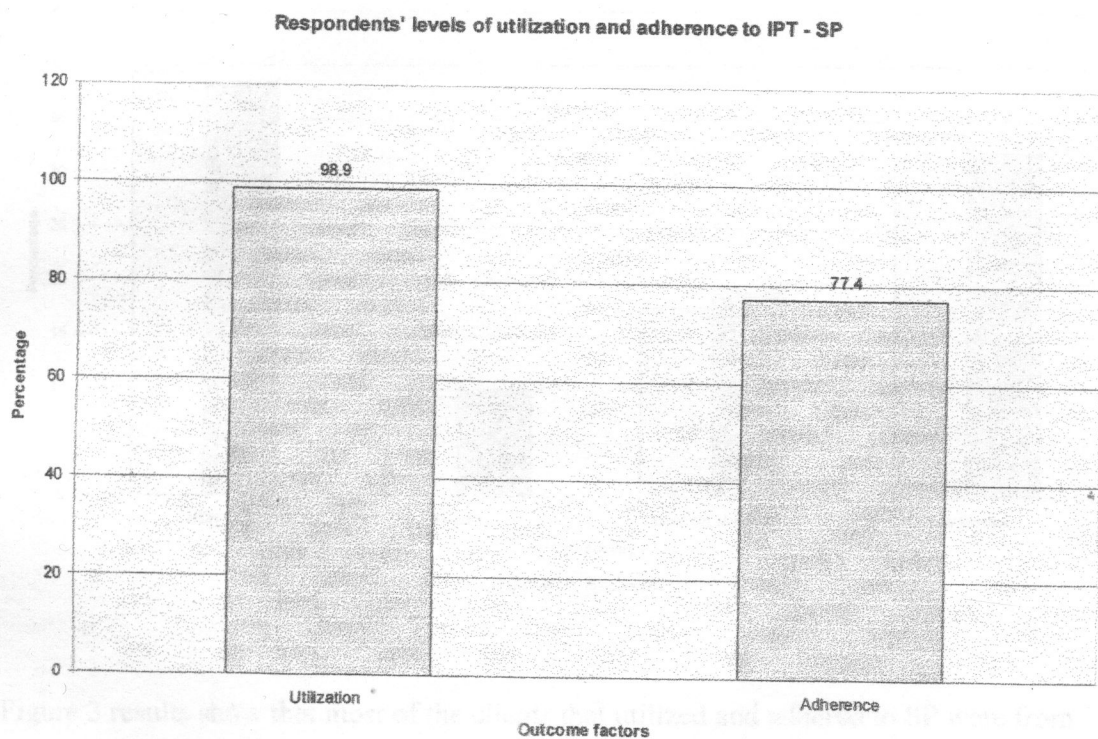
4.1 DEMOGRAPHIC DATA

Quantitative data was collected from 350 client respondents as follows: 136 (39 percent) from Ndola Central Hospital (NCH), 117 (33 percent) from New Masala clinic, 62 (18 percent) from Chipokota Mayamba clinic and 35 (10 percent) from Twapia. 324 (92.6 percent) of these come from peri-urban areas.

The ages of the respondents was from 15 – 45 years who were in their ninth month of pregnancy, and, those who had delivered at ninth month of pregnancy after attending antenatal clinics in Ndola Urban. Qualitative data was collected through eight Focus Group Discussions (FGDs). Each area had two FGDs. Each FGD consisted of ten participants. The groups comprised women who were in their ninth month of pregnancy and those who had delivered at ninth month of pregnancy. The age range of client respondents was from 15 to 45 years. This was to make them similar to those in quantitative data. A checklist was also used to assess the availability and accessibility of SP at the health facilities and whether client respondents received SP by DOT.

4.2 LEVELS OF UTILIZATION AND ADHERENCE TO SP

Figure 2: Levels of utilization and adherence to IPT - SP



The study results in figure 2 show that 346 (98.9 percent) clients utilized SP where as 271 (77.4 percent) adhered to SP the prescribed drug for IPT for the control of malaria during pregnancy.

4.2.1 CLIENTS' SITE SPECIFIC UTILIZATION AND ADHERENCE RATES TO SP

Figure 3: Clients' site specific Utilization and Adherence rates to SP

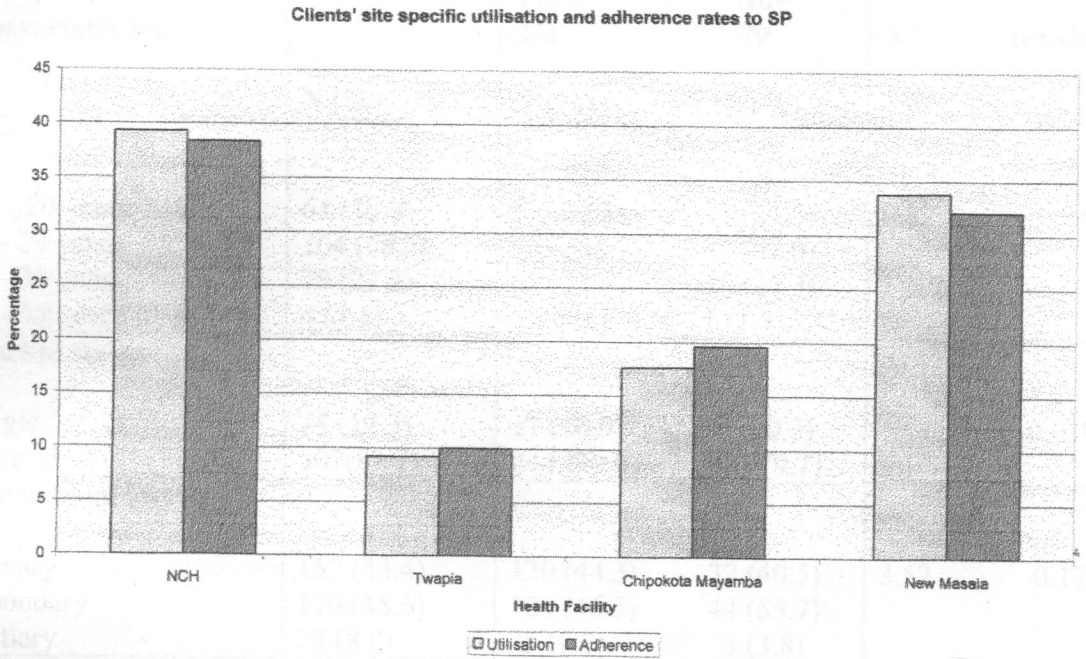


Figure 3 results show that most of the clients that utilized and adhered to SP were from Ndola Central Hospital and New Masala. NCH client utilization was 136 (39.4 percent) where as adherence was 104 (38.4 percent). New Masala had 117 (33.8 percent) clients who utilized SP and 87 (32.1 percent) who adhered.

Further analysis of factors associated with utilization could not be conducted because of the few number of respondents who did not utilize. The following sections are concerned with factors associated with adherence.

4.3 CLIENTS' ADHERENCE TO IPT - SP

Table 1: Clients' demographic characteristics by adherence

Characteristics	Total=350 N (%)	Adherence to SP		X ²	p-value
		Yes= 271 N (%)	No= 79 N(%)		
Age					
15 - 20 years	64 (18.3)	47 (17.3)	17 (21.5)	0.82	0.845
20 - 29 years	204 (58.3)	159 (58.7)	45 (57.0)		
30 - 39 years	78 (22.3)	62 (22.9)	16 (20.3)		
40 - 45 years	4 (1.1)	3 (1.1)	1 (1.3)		
Marital status					
Single	43 (12.3)	27 (10.0)	16 (20.3)	0.019 ^a	
Married	307(87.7)	244 (90.0)	63 (79.7)		
Educational level					
Primary	152 (43.4)	120 (44.3)	32 (40.5)	3.52	0.172
Secondary	170 (48.6)	126 (46.5)	44 (55.7)		
Tertiary	28 (8.0)	25 (9.2)	3 (3.8)		
Occupation					
House wife	223 (63.7)	173 (63.8)	50 (63.3)	1.46	0.692
Student	29 (8.3)	20 (7.4)	9(11.4)		
Employed	30 (8.6)	24 (8.9)	6 (7.6)		
Self employed	68 (19.4)	54 (19.9)	14 (17.7)		
House hold income					
No income	5 (1.4)	1 (0.4)	4 (5.1)	17.94	0.003
< K200 000 / month	75 (21.4)	51 (18.8)	24 (30.4)		
K200 000 – K499 999/m	135 (38.6)	104 (38.4)	31 (39.2)		
K500 000 – K799 999/m	66 (18.9)	56 (20.7)	10 (12.7)		
K800 000 – K999 999/m	19 (5.4)	16 (5.9)	3 (3.8)		
K1 m and above	50 (14.3)	43 (15.9)	7 (8.9)		
Religion					
Christian	346 (98.9)	267 (98.5)	79 (100.0)	0.578 ^a	
Others	4 (1.1)	4 (1.5)	0 (0.0)		

Table 1: Clients' demographic characteristics by adherence cont.

Characteristics	Total= 350 N (%)	Adherence		X ²	p-value
		Yes=271 N (%)	No= 79 N (%)		
Mode of transport					
Walking	294 (84.0)	228 (84.1)	66(83.5)	2.29	0.514
Bus	44 (12.6)	32 (11.8)	12 (15.2)		
Personal vehicle	5 (1.4)	5 (1.8)	0 (0.0)		
Others	7 (2.0)	6 (2.2)	1 (1.3)		
Distance to health facility					
Less than 30 min	254 (72.6)	188 (73.1)	56 (70.9)	0.19	0.979
30 – 59 min	58 (16.6)	44 (16.2)	14 (17.7)		
60 – 119 min	33 (9.4)	25 (9.2)	8 (10.1)		
120 – 180 min	5 (1.4)	4 (1.5)	1 (1.3)		

^a denotes result obtained by the Fisher's Exact Test (2 sided).

Table 1 shows that there was a significant association between marital status and adherence ($p = 0.019$) as well as household income and adherence ($p = 0.003$). Those 244 (90 percent) clients who were married were more likely to adhere to SP than those who were single. The study results also revealed that most 31 (39.2 percent) of those who earned an income of K200 000 - 499 999 did not adhere to SP which is an indication that they are of low social economic status. There was no significant association between age, educational level, occupation, religion, mode of transport and distance to health facilities in relation to adherence to SP.

Table 2: Clients' period of pregnancy when first given SP by adherence

Description	Totals=350 N (%)	Adherence to SP		X ²	p-value
		Yes= 271 N (%)	No= 79 N (%)		
Period of pregnancy when first given SP					
0 - 3 months	30 (8.6)	24 (8.9)	6 (7.7)	25.80	< 0.001
4 - 6 months	266 (76.2)	220 (81.2)	46 (59.0)		
7 - 9 months	53 (15.2)	27 (10.0)	26 (2.5)		

Table 2 reveals that there was a significant statistical association between period of pregnancy when given the first SP and adherence. The table shows that the clients 220 (81.2 percent) who got the first SP between four and six months were more likely to adhere to SP than those clients who got after six months of pregnancy ($p < 0.001$) probably due to the short period of time for antenatal attendance before delivery.

4.4 AVAILABILITY /ACCEPTABILITY OF IPT-SP

Table 3: Responses by respondents on availability and acceptability of IPT –SP

Characteristics	Respondents Total =350	
	N	%
Availability of SP at health facility		
Yes	346	(98.9)
No	4	(1.1)
Acceptability of SP to be taken at health facility		
Yes – taken immediately at health centre	213	(60.9)
No - taken later at home	133	(38.0)
Did not take it	4	(1.1)

Table 3 shows that the majority of the respondents 346 (98.9 percent) stated that SP was available at the health facilities. Most of the respondents 213 (60.9 percent) stated that they accepted to take SP immediately at the health centre. This is below the MOH strategic plan target of covering 90 percent of women during pregnancy with IPT.

Table 4: Clients' acceptability of SP by adherence

Description	Total=346 N (%)	Adherence to SP		X ²	p-value
		Yes Clients' Total = 268 N (%)	No Clients' Total =78 N (%)		
Acceptability of SP to be taken at health centre					
Yes	213 (61.6)	168 (62.7)	45 (57.7)	2.22	0.330
No	133 (38.4)	100 (37.3)	33 (42.3)		

Table 4 shows no significant association was observed between acceptability and adherence ($p = 0.330$).

Table 5: Reasons why SP is not taken immediately at the health centre

Reasons why SP was not taken from the health centre	Clients Total =133 N	Percentage %
Likes to take SP after meals to avoid effects	36	27.0
Given SP by staff to take from home	97	73.0

Table 5 shows that among those that took SP from home 97 (73.3 percent) were given SP by staff to take from home while 36 (27 percent) took SP after a meal to avoid adverse effects.

Table 6: Checklist for the health facilities on availability of SP

Description of item	Number of health facilities with items (n)
SP stocks on bin cards	2
Clean cups	2
Plain drinking water	1
Guidelines on IPT policy	1
Antenatal cards	4
DOT for SP	1

The checklist in table 6 shows that only half of the health facilities had supplies of SP all the time and cups for taking the SP. The other half indicated that sometimes SP was in short supply. Only one out of the four health facilities was reported to have water for taking the SP at the health facilities. Only one out of the four health facilities provided SP to clients by DOT. In addition, the results also revealed that only one health facility had guidelines stuck on the wall for the health care providers to follow. All the four health facilities had antenatal cards in stock for records of antenatal attendance and SP usage.

4.5 FACTORS ASSOCIATED WITH UTILIZATION AND ADHERENCE TO SP CLIENTS KNOWLEDGE ON MALARIA

Table 7: Clients' knowledge on malaria

Characteristics	Clients' Total =350 N	Percentage (%)
Description of malaria		
Caused by mosquitoes	100	28.6
Just an illness	135	38.6
Characterized by symptoms	84	24.0
Others	11	3.1
Do not know	20	5.7
Malaria transmission		
Knowledgeable	161	46.0
Not knowledgeable	189	54.0

In table 7 most of the clients were taken aback when asked what malaria was. Upon probing, most 135 (38.6 percent) of the clients described malaria as just an illness. The others 100 (28.6 percent) described it as an illness caused by mosquito while 84 (24 percent) described it by symptoms. Most of the clients 189 (54 percent) were not knowledgeable on malaria transmission. This was a serious drawback as clients were unable to recognize malaria in pregnancy.

Table 8: Clients' knowledge of malaria by adherence to IPT-SP

Description	Totals N = 350	Adherence to SP		X ²	p-value
		Yes = 271 N (%)	No =79 N (%)		
Being able to tell that person has malaria					
Knowledgeable	341 (97.4)	268 (98.9)	73(92.4)	10.28	0.001
Not knowledgeable	9 (2.6)	3 (1.1)	6 (7.6)		
Being able to tell number of times supposed to receive SP during pregnancy					
Knowledgeable	237 (68.1)	188 (69.9)	49 (62.0)	1.40	0.238
Not knowledgeable	111 (31.9)	81 (30.1)	30 (38.0)		

Table 8 shows a statistically significant association of clients' knowledge of malaria by adherence to IPT-SP. Those 268 (98.9 percent) clients that could identify malaria symptoms were more likely to adhere to IPT-SP than those that could not (p= 0.001). However, there was no statistical significant association between knowledge on number of times one was supposed to receive SP and adherence (p =0.238).

4.5.1 CLIENTS' PERCEPTION ON MALARIA

Table 9: Clients' Perception of Malaria

Description	Clients' Total=350 N	Percentage %
Clients' classification of malaria		
Very serious	126	36.0
Serious	208	59.4
Not serious	16	4.6
Whether SP works in the prevention of malaria		
Yes	336	96.0%
No	14	4.0%

Table 9 reveals that most 208 (59.4 percent) of client-respondents perceived malaria as a serious condition. Asked whether SP works in the prevention of malaria, the majority (96 percent) said it does.

Table 10 : Clients' perception on attitude of health care providers by adherence to IPT-SP

Description	Totals=350 N (%)	Adherence to SP		X ²	p-value
		Yes=271 N (%)	No= 79 N (%)		
Attitude of health providers					
Very good	151(43.1)	130(48.0)	21 (26.6)	10.55	0.001
Good	199(56.9)	141 (52.0)	58 (73.4)		

Table 10 shows that there was a significant statistical association between attitude of health providers and adherence (p=0.001). The results show that clients who perceived

health care providers' attitudes as being very good (48 percent) were more likely to adhere to IPT-SP than those who perceived them as being good (73.4 percent).

4.5.2 CLIENTS' REASONS FOR NON-ADHERENCE TO IPT-SP

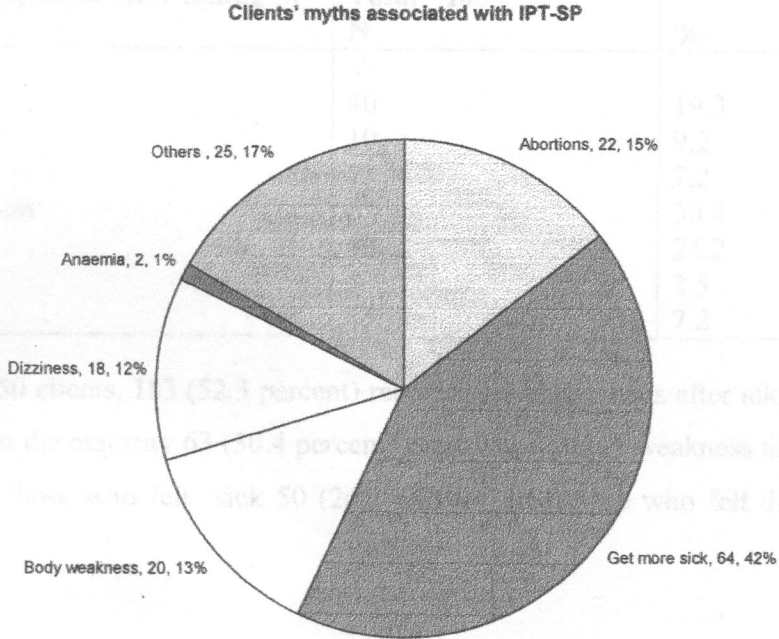
Table 11 Clients' reasons for non-adherence to IPT-SP

Why SP was given less than 3 times	Clients Total =79 N	Percentage %
Was not given other doses by staff	22	27.8
Attended ANC twice or less times	39	49.4
Late booking	10	12.7
Others	8	10.1

Table 11 shows that most 39 (49.4 percent) of the clients took SP less than 3 times because they attended antenatal clinic only twice or less followed by not given other doses by health care providers 22 (27.8 percent).

4.5.3 MYTHS / TABOOS ASSOCIATED WITH IPT - SP IN PREGNANCY

Figure 4: Clients' myths associated with IPT-SP



The pie-chart above (figure 4) shows that 151 clients have myths about SP with the majority (42 percent) mentioning that SP makes feel sick after taking it. Some clients mentioned that it causes abortions 22 (15 percent), while 20 (13 percent) mentioned weakness.

No. of times suffered from malaria	No. of clients		P-value
	Yes	No	
None	137 (39.1)	170 (62.7)	0.230
Once	213 (60.9)	36 (45.6)	
Twice		170 (62.7)	
Thrice & above		43 (54.4)	

4.5.4 EFFECTS OF SP EXPERIENCED BY CLIENTS

Table 12: Effects experienced by clients

Effects experienced after taking SP	Clients	Percentage
	Total =183 N	%
Dizziness	40	19.3
Vomiting	19	9.2
Headache	15	7.2
Body weakness	63	30.4
Felt sick	50	24.2
Sweats	5	2.5
Other	15	7.2

Out of the 350 clients, 183 (52.3 percent) reported adverse effects after taking SP. Table 12 shows that the majority 63 (30.4 percent) experienced body weakness after taking SP followed by those who felt sick 50 (24.2 percent) and those who felt dizzy 40 (19.3 percent).

4.6 EPISODES OF MALARIA IN PREGNANCY

Table 13: Episodes of malaria among pregnant women and number of times suffered from malaria by adherence to IPT -SP

Description	Totals = 350 N (%)	Adherence to SP		X ²	p-value
		Yes =271 N(%)	No =79 N(%)		
Has suffered from malaria this pregnancy					
Yes	137 (39.1)	101 (37.3)	36 (45.6)	1.44	0.230
No	213 (60.9)	170(62.7)	43 (54.4)		
No. of times suffered from malaria					
None	213 (60.9)	170 (62.7)	43 (54.4)	7.42	0.060
Once	90 (25.7)	65 (24.0)	25 (31.6)		
Twice	29 (8.3)	19 (7.0)	10 (12.7)		
Thrice & above	18 (5.1)	17 (6.3)	1 (1.3)		

Table 13 shows no statistically significant association between prevalence rate of malaria, number of times suffered from malaria and adherence to IPT- SP were observed.

Table 14: Results of Multivariate analysis

Factor	Odds Ratio (OR) (95% Confidence Interval (CI))
Can tell that a person has malaria	
Yes	7.59 (1.73, 33.3)
No	1
Period of pregnancy when first given SP	
0-3	4.85 (1.63, 14.45)
4-6	4.79 (2.50, 9.18)
7-9	1
Attitude of health providers	
Very good	2.64 (1.46, 4.75)
Good	1

Table 14 results show that respondents who could tell that a person has malaria were 7.59 times more likely to adhere to SP compared to clients who could not tell. The table also shows that clients who started receiving SP at six months of pregnancy and below were about five times more likely to adhere to SP compared to respondents who received SP after six months. The table also shows that clients who perceived health care providers' attitudes as being very good were 2.64 times more likely to adhere to IPT-SP than those that perceived them as being good.

SECTION B - QUALITATIVE DATA (FOCUS GROUP DISCUSSIONS)

Matrix 1: Clients' knowledge on malaria by location

LOCATION	DEFINITION OF MALARIA	CAUSES OF MALARIA	SIGNS AND SYMPTOMS OF MALARIA
TWAPIA	<ul style="list-style-type: none"> • An illness • Disease characterised by feeling cold • Feeling cold • Change of locality and drinking water from the new locality 	<ul style="list-style-type: none"> • Contaminated water • Mosquito • Cold weather 	<ul style="list-style-type: none"> • Shivering • Feeling cold • Vomiting • Body hotness • Diarrhoea • Abdominal pains
NEW MASALA	<ul style="list-style-type: none"> • An illness • An illness caused by mosquito 	<ul style="list-style-type: none"> • Mosquito 	<ul style="list-style-type: none"> • Feeling cold • Joint pains • Headache • Vomiting • Loss of appetite • Sneezing and coughing • Weakness • Body pains • Body hotness • Painful legs • Dizziness
CHIPOKOTA MAYAMBA (CHIFUBU)	<ul style="list-style-type: none"> • An illness • An illness where you have fever, feel cold caused by mosquito 	<ul style="list-style-type: none"> • Mosquito • Contaminated water 	<ul style="list-style-type: none"> • vomiting • Feeling cold • Body hotness • Diarrhoea • Bitterness in mouth • Headache • Joint pains • Weakness • Backache • Bitter taste in mouth • Still birth • Low birth weight
NDOLA CENTRAL HOSPITAL	<ul style="list-style-type: none"> • A disease caused by mosquito • An illness 	<ul style="list-style-type: none"> • Mosquito • Untreated drinking water 	<ul style="list-style-type: none"> • Body hotness • vomiting • Headache • Feeling cold • Bitter mouth • Bad taste in mouth • Weakness • Joint pains

Matrix 1 shows that respondents from only one health facility were knowledgeable on the cause of malaria while respondents from the other three health facilities mentioned mosquito and attributed malaria to drinking contaminated water. This is an indication that there was knowledge-deficit among respondents at the three health facilities. The study results also show that respondents from all four health facilities were knowledgeable on the signs and symptoms of malaria. The most common signs and symptoms of malaria mentioned were vomiting, feeling cold and body hotness. Respondents did not seem to differ on the effects of malaria in pregnancy from all four locations. The common one mentioned was abortion. The matrix demonstrates that respondents were not knowledgeable about the cause of malaria hence, could not define malaria appropriately, but just an illness.

Matrix 2: Clients' knowledge on SP by location

LOCATION	1 ST ANTENATAL VISIT	1 ST SP WHEN TAKEN	IMPORTANCE OF SP	TIMES SUPPOSED TO TAKE SP IN PREGNANCY
TWAPIA (20) 1 st group 10 2 nd group 10	<ul style="list-style-type: none"> • 1 at 2/9 • 8 at 5/9 • 10 at 6/9 • 1 at 7/9 	<ul style="list-style-type: none"> • 1 at 3/9 • 8 at 5/9 • 10 at 6/9 • 1 at 7/9 	<ul style="list-style-type: none"> • Prevents mother and baby from malaria 	<ul style="list-style-type: none"> • All mentioned 3
NEW MASALA (20) 1 st group 10 2 nd group 10	<ul style="list-style-type: none"> • 2 at 3/9 • 2 at 4/9 • 7 at 5/9 • 6 at 6/9 • 3 at 7/9 	<ul style="list-style-type: none"> • 2 at 3/9 • 2 at 4/9 • 7 at 5/9 • 6 at 6/9 • 3 at 7/9 	<ul style="list-style-type: none"> • Prevention of malaria in pregnancy 	<ul style="list-style-type: none"> • 18 mentioned 3 times • 2 did not know
CHIPOKOTA MAYAMBA (20) 1 st group=10 2 nd group=10	<ul style="list-style-type: none"> • 1 at 2/9 • 5 at 3/9 • 2 at 4/9 • 6 at 5/7 • 6 at 6/7 	<ul style="list-style-type: none"> • 3 at 3/9 • 5 at 4/9 • 6 at 5/9 • 6 at 6/9 	<ul style="list-style-type: none"> • Protects baby and mother from malaria 	<ul style="list-style-type: none"> • 6 mentioned 4 times • 14 mentioned 3 times
NDOLA CENTRAL HOSPITAL (20) 1 st group=10 2 nd group=10	<ul style="list-style-type: none"> • 2 at 3/9 • 3 at 4/9 • 4 at 5/9 • 5 at 6/9 • 3 at 7/9 • 3 at 8/9 	<ul style="list-style-type: none"> • 2 at 3/9 • 3 at 4/9 • 4 at 5/9 • 5 at 6/9 • 3 at 7/9 • 3 at 8/9 	<ul style="list-style-type: none"> • Prevents mother and baby from malaria 	<ul style="list-style-type: none"> • All mentioned 3 times

Matrix 2 shows that the majority of the respondents started the first ANC visit by the fifth to sixth months of pregnancy. It was during this time that the majority of the

respondents received the first SP in pregnancy. Among the four health facilities only one had all respondents that had attended ANC by six months hence had the least number of respondents who did not adhere to SP as compared to the other three. The reason given by the respondents was that health providers did not give them doses during ANC visits. The respondents from all the four health facilities did not seem to differ on knowledge on the importance of SP in pregnancy. They all mentioned that SP prevented both mother and baby from malaria. When asked how many times a pregnant woman is supposed to take SP in pregnancy, few respondents showed a considerable lack of knowledge at the two health facilities. The matrix also shows that there was knowledge deficit on the number of times SP was supposed to be taken in pregnancy by respondents from half of the health facilities. This could have contributed to some of them not adhering to SP.

Matrix 3: Clients' adherence to SP by location

LOCATION	HOW MANY TIMES TOOK SP IN PREGNANCY	IF TAKEN SP LESS THAN 3 TIMES IN PREGNANCY, WHY?
TWAPIA	<ul style="list-style-type: none"> • 16 took 3 times • 3 took once • 1 took twice 	<ul style="list-style-type: none"> • Started ANC late • Missed some ANC visits
NEW MASALA	<ul style="list-style-type: none"> • 2 took 4 times • 13 took 3 times • 2 took once • 3 took twice 	<ul style="list-style-type: none"> • Only given once by staff • Not given other doses by staff • Attended ANC only twice • Was on quinine 3rd visit
CHIPOKOTA MAYAMBA	<ul style="list-style-type: none"> • 4 took 4 times • 14 took 3 times • 2 took twice 	<ul style="list-style-type: none"> • Was not given by staff • Gave a neighbour who was sick and was in need of SP
NDOLA CENTRAL HOSPITAL	<ul style="list-style-type: none"> • 12 took 3 times • 3 took 4 times • 5 took 2 times 	<ul style="list-style-type: none"> • Attended ANC only twice • Was not given the 1st SP by staff

The study in Matrix 3 shows that on average only three respondents from each of the health facilities did not adhere to IPT-SP. The matrix also shows that respondents from the three health facilities took SP less or more than three times. This shows that there was knowledge deficit on the number of times a pregnant woman is supposed to receive

SP during pregnancy. The reasons cited for taking SP less than 3 times were that health care providers did not give the respondents the remaining doses of SP during the ANC visits, and that some respondents attended ANC less than 3 times. The study has also shown that due to lack of knowledge there was also over utilization of SP.

Matrix 4: Clients' perception on effectiveness of SP by location

LOCATION	HOW MANY SUFFERED FROM MALARIA DURING THIS PREGNANCY	WHETHER SP IS EFFECTIVE	
		YES REASON	NO REASON
TWAPIA	<ul style="list-style-type: none"> • 3 before taking SP 	<ul style="list-style-type: none"> • Works • No malaria after taking SP • Malaria is cleared off 	-
NEW MASALA	<ul style="list-style-type: none"> • 1 	<ul style="list-style-type: none"> • Had no malaria in pregnancy 	-
CHIPOKOTA MAYAMBA	<ul style="list-style-type: none"> • 4 	<ul style="list-style-type: none"> • Had no malaria after SP • Had no malaria in pregnancy 	<ul style="list-style-type: none"> • NIL
NDOLA CENTRAL HOSPITAL	<ul style="list-style-type: none"> • 4 	<ul style="list-style-type: none"> • Had no malaria after SP • Recovered after SP 	<ul style="list-style-type: none"> • Whenever I took it I got sick

Matrix 4 shows that only 12 out of the 80 respondents had malaria in pregnancy. Among these one health facility had only one respondent who suffered from malaria as compared to the other three that had between three and four respondents that had malaria. Respondents did not seem to have variations in their knowledge on the importance of SP in pregnancy. Most of the respondents at the health facilities explained that they had no malaria in pregnancy or after taking SP.

Matrix 5: Whether client respondents took SP by directly observed therapy in relation to location

LOCATION	PLACE WHERE SP WAS TAKEN FROM	IF NOT TAKEN AT CLINIC GIVE REASONS
TWAPIA	<ul style="list-style-type: none"> • At clinic (16) • At home (4) 	<ul style="list-style-type: none"> • To avoid effects • Given by health care providers to take from home
NEW MASALA	<ul style="list-style-type: none"> • At clinic (6) • After lunch (10) • At night (4) 	<ul style="list-style-type: none"> • To avoid effects • Given by health care providers to take from home
CHIPOKOTA MAYAMBA	<ul style="list-style-type: none"> • At clinic (all 20) 	<ul style="list-style-type: none"> • N/A
NDOLA CENTRAL HOSPITAL	<ul style="list-style-type: none"> • At clinic (11) • At home after a meal (9) 	<ul style="list-style-type: none"> • To avoid effects • Given by health care providers to take from home.

Matrix 5 shows that the majority of respondents took SP at a health facility. Among respondents that took SP from home reasons given from all the health facilities did not seem to differ. Most of them explained that they took SP from home to avoid adverse effects after a meal.

Matrix 6: Effects and myths on SP by location

LOCATION	EFFECTS AFTER TAKING SP	MYTHS OF SP
TWAPIA	<ul style="list-style-type: none"> • 6=nil • 6=Weakness • 5=Dizziness • 3=Vomiting/ nausea 	<ul style="list-style-type: none"> • Abortion
NEW MASALA	<ul style="list-style-type: none"> • 5=Nil • 6=Weak • 7=dizzy • 1=vomiting • 1=body hotness 	<ul style="list-style-type: none"> • Abortion • Abdominal pains • Miscarriage • Death of mother
CHIPOKOTA MAYAMBA	<ul style="list-style-type: none"> • 5=NIL • 2=Heart palpitations • 3=nausea • 5=weakness • 2=felt sick • 1=body hotness • 2=dizzy 	<ul style="list-style-type: none"> • Felt sick • Weakness • Abortion • Cause malaria
NDOLA CENTRAL HOSPITAL	<ul style="list-style-type: none"> • 3=nil • 2= if no malaria no effect but if has malaria get effects like headache, vomiting, weakness • 5=weakness • 3=dizzy • 1=vomiting • 1= heart palpitations • 5= felt sick 	<ul style="list-style-type: none"> • Baby admitted to hospital due to malaria • Baby gets tired leading to still birth • Felt sick after taking SP • Nausea and vomiting • Abortion • weakness

Matrix 6 shows that the majority of the respondents had no effects after taking SP. The common effects mentioned were weakness and dizziness. There were more myths recorded about SP in one particular health facility. The common myth mentioned was abortion. These myths may affect the adherence to SP.

CHAPTER FIVE

5.0 DISCUSSION

5.1 LIMITATION OF THE STUDY

The FGDs were not conducted according to age group, parity and level of education because it was even rather difficult to get the required number of ten (10) FGD participants from clients visiting the health facility. A convenient sample comprising antenatal mothers who had reached nine months and postnatal mothers who had delivered at nine months of pregnancy was involved. Therefore, the study combined all age groups from 15 to 45 years by location.

Analysis of factors associated with utilization could not be conducted because of few numbers of respondents who did not utilize SP. Subsequent sections of the study are concerned with factors associated with adherence.

5.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

Demographic characteristics of respondents is very important because it helps us assess the representativeness of the sample. The study revealed that out of the 350 clients, more than half (58.3 percent) respondents were in the age-group 20 - 29 years. This shows that this age-group is at risk of malaria in the absence of prevention. The age-group also signifies that child bearing starts early, and, hence these women are at risk of complications arising from malaria. This study concurs with research done in the rural eastern area of Gambia by Okoko *et.al.*, (2002), which revealed that the mean age of the majority of pregnant women involved in the study was 23.7 years which is within the range 20 - 29 years. Pregnant women are particularly vulnerable to malaria as pregnancy reduces a woman's immunity to malaria infection and increases the risk of illness, severe anemia and death (CBoH, 2001). Health care providers need to encourage women to take SP to protect themselves and the unborn baby from malaria since they live in high transmission area where most cases of malaria in pregnancy do not have symptoms. IPT reduces the prevalence of malaria during pregnancy

(NMCC, 2006; Park, 2005). This will help reduce complications associated with malaria in pregnancy which increase the chance of maternal anaemia, abortion, stillbirth, prematurity, intrauterine growth retardation and low birth-weight (Steketee, *et.al.*, 1996). For this reason IPT is essential for all pregnant women. For those mothers who are allergic to SP, ITNs are recommended for the prevention of malaria in pregnancy as a government policy although they are still predisposed to malaria infection.

The study revealed that the majority of the clients were married (87.7 percent) compared to single women (12.3 percent). Single women included those not married, widowed, divorced and on separation. The study also revealed that in spite of most (48.6 percent) of the clients attaining a level of secondary education, 19.4 percent were not employed. Only 8.6 percent were employed while 8.3 percent were students. This meant that they depended on someone else for financial support.

5.3 LEVELS OF UTILIZATION AND ADHERENCE TO IPT-SP

The study revealed that 98.9 percent of respondents utilized SP. This shows that women are aware of the preventive measures of malaria in pregnancy which have been put in place by Ministry of Health although adherence still remains a problem. The study revealed that 77.4 percent of the clients adhered to IPT-SP, a finding that shows that we have not yet reached the requirement set by Ministry of Health (2005), whose target is to have at least 90 percent of all pregnant women taking all three doses of IPT. Therefore, there is need for districts to strengthen ANC attendance and enhance positively health care providers' attitude sensitizing mothers on IPT-SP.

This study agrees with studies conducted in Blantyre, Malawi which revealed that adherence to IPT was a problem among pregnant women. The study revealed that 76 percent had taken their first dose of IPT-SP, but only 37 percent took the second dose. This low administration of two doses of IPT-SP occurred

despite 88 percent of women reporting attendance at two or more antenatal visits during their pregnancy, and 87 percent reporting their first visit attendance during the first or second trimester of pregnancy (Holtz *et.al.*, 2004). Many of the women interviewed, knew of the dangers of malaria in pregnancy and of the importance and benefits of taking IPT, but, still they did not adhere to IPT-SP which is also true in this study.

This study was also in line with a second facility - based survey which was conducted by Ashwood-Smith *et.al.* (2002) between May and June 2001 at Queen Elizabeth Central Hospital in southern Malawi (Blantyre) in order to determine the level of implementation of the National IPT-SP policy and to explore factors affecting that implementation. The survey demonstrated lower proportions of SP use; 51 percent of women received one dose, 14 percent received two doses, and 35 percent received no SP (n =301). Some of the reasons provided by the author for the low uptake of SP were: inadequate drug availability, late presentation of women for antenatal clinic visits and some staff not following the malaria policy guidelines accurately, which is the case in this study. The current study results revealed that inspite of the clients' myths or taboos, there was no significant association in relation to adherence.

5.3.1 CLIENTS' SITE SPECIFIC UTILIZATION AND ADHERENCE RATES TO SP

The study revealed that the majority of the respondents who utilized and adhered to SP were from Ndola Central Hospital and New Masala. NCH respondent utilization was 39.4 percent while adherence was 38.4 percent. New Masala had 33.8 percent utilization and 37.1 percent adherence.

5.4 CLIENTS' DEMOGRAPHIC CHARACTERISTICS AND ADHERENCE TO IPT- SP

The majority (58.7 percent) of those who adhered to SP were in the age-group 20 - 29 years probably due to the fact that this age-group was also the majority in

the study. The study revealed that there was a significant association between marital status and adherence. Respondents (90 percent) who were married were more likely to adhere to IPT – SP than those who were single probably due to the fact that married women received a lot of support from their spouses compared to single women.

The study also revealed that there was a significant statistical association between income and adherence to SP. The study showed that most of those (39.2 percent) who earned an income of K200 000 – K499 999 did not adhere to SP because of low socio-economic conditions. However, there were no significant statistical associations between age, educational level, occupation and religion in relation to adherence to SP. The study also showed that in spite of the respondents' attainment of secondary education the majority did not adhere to SP. The main factor contributing to this could be the knowledge gap on the definition of malaria and causes. The study revealed that most of the clients described malaria as just an illness while others said that malaria was caused by drinking contaminated water and not by the bite of mosquitoes. The clients were also not knowledgeable on how many times to receive SP in pregnancy. This contributed to over utilization of SP. Hence, health education is required for clients in order for them to understand malaria, its cause, how to prevent it and how many times to take SP.

The study showed no statistical association between distance to health facility and adherence. According to the mandate of the government of Zambia, MOH remains committed to the policy that the health services were brought as close to the people as possible. This commitment was evident even in this research. The majority (72.6 percent) of the clients resided around the health facilities but still failed to acquire maximum benefit from these health facilities. According to MOH (2006) data, 56 percent of women deliver at home and do not come to the health facilities after six to seven months of pregnancy which predisposes them

further default by not adhering to IPT-SP. This is compounded by the fact that there is no follow-up of those who miss these doses.

5.4.1 RELATIONSHIP BETWEEN CLIENTS' PERIOD OF PREGNANCY WHEN FIRST SP WAS GIVEN AND ADHERENCE TO IPT-SP

The study has shown that there was a significant association between period of pregnancy when first given SP and adherence. The study findings revealed that clients (81.2 percent) who started attending antenatal clinic between four and six months of pregnancy were more likely to adhere to IPT-SP than those who started after six months of pregnancy. This was also true with the results from the FGDs which revealed that the majority of those who received SP in the second trimester (between five and six months) of pregnancy adhered to SP. The multivariate analysis also revealed that clients who were first given SP at six months and below were about five times more likely to adhere to SP than those who did not. This is because they had ample time in which to attend the ANC and were able to receive all the three doses of IPT.

The FGD conducted among the postnatal mothers and pregnant women between 15 and 45 years of age agree with the results of the study. The study revealed that majority of the respondents received their first SP during their first antenatal visits at the health facilities. This was an indication that timing of the first visit was cardinal in a pregnant woman as it determined how many doses of SP she was to receive during pregnancy. The earlier a pregnant woman commenced her ANC visits the better the adherence.

The study findings were similar to the study conducted by Ashwood-Smith (2002) on availability and use of Sulphadoxine-Pyrimethamine in pregnancy in Blantyre, Malawi which revealed that the mean timing of the first SP was at 22.8 weeks of gestation; and the second SP dose was 31.1 weeks gestation. There was a strong association between first SP dose and timing of first ANC visit which is

also true in this study. There was an equally strong association between timing of second SP dose and the second ANC visit. There is need for health care providers to emphasize the importance of early and regular attendance of ANC to enhance adherence to IPT-SP.

5.5 AVAILABILITY / ACCEPTABILITY OF IPT-SP

The majority of respondents (98.9 percent) stated that SP was available at the health institutions. The study findings were not in line with the checklist results which revealed that half of the health facilities had no SP at times. This could have contributed to health care providers not giving some clients the doses of SP during some of the ANC visits. FGDs revealed demonstrated that only one out of the four health facilities provided SP to all their clients by DOT.

This study revealed that 60.9 percent of the respondents accepted to take SP immediately at the health facility while 38 percent took SP from home and 1.1 percent did not take SP. This is below the Ministry of Health target of covering 90 percent of women with IPT during pregnancy (MOH, 2005). Reasons for not taking SP immediately at health facilities were that the majority (73 percent) of the clients were just given SP by staff to take at home while 27 percent revealed that they liked taking it at home after a meal to avoid the effects of SP such as dizziness, weakness and vomiting. There were no variations in reasons given by the FGD respondents from all four health facilities. The health care providers interviewed (using a check list) revealed that about half of the health facilities had erratic water supply and no cups for the clients to use. This could have contributed to health care providers giving SP to clients to be taken at home. Therefore, the MOH and the health facility management should ensure that safe water and cups for taking SP are provided to clients in order to enhance adherence.

Patient adherence is a major determinant of therapeutic response to anti malarial drugs, as most treatments are taken at home without medical supervision (Yeung

and White, 2005). If we have to achieve the desired adherence levels SP has to be given by DOT. The question in the study is whether clients adhere to SP as some of the respondents take their SP from home where they are unsupervised. One client during the FGD explained, “*I did not take my second dose of fansidar because I gave it to a sick neighbour who needed it most.*” This means that pregnant women take SP casually. Some of the clients do not understand the nature of the disease, hence, some of them attribute the cause of malaria to drinking contaminated water rather than by mosquito bites. There is need to sensitize the clients on the causes of malaria and seriousness of the disease so that they understand, and, in turn are able to protect themselves and their unborn babies against malaria.

In addition, the checklist has shown that only one health facility had guidelines for health care providers to follow. There is need to have guidelines at health facilities to remind both clients and health care providers. This will ensure that all eligible clients are provided with SP (when due) by DOT each time they visited the ANC. Sometimes we need to see patients more regularly for instance when there is hypertension, proteinuria and oedema. There is also need for health education and involvement of the community in implementation of IPT so that they feel part of the health services. Furthermore, the MOH and district management team should ensure availability of SP at all times; clean water and cups should be available at all the health facilities for taking SP by DOT.

5.6 FACTORS ASSOCIATED WITH ADHERENCE TO IPT – SP

5.6.1. CLIENTS’ KNOWLEDGE ON MALARIA

Most of the clients were taken aback when asked what malaria was. However, upon probing, 38.6 percent of the clients described malaria in Bemba as: “*bulwele fye*” meaning ‘just an illness’. Others qualified it as an illness caused by mosquito bites while others described it by symptoms. This study agrees with the study done by Sikazwe (2003) which found out that about half (54 percent) of the clients were not knowledgeable on malaria transmission. There is a serious

drawback if clients are not able to recognize how malaria is acquired. This is perhaps one of the reasons for the clients not coming to the health facilities for ANC early and regularly and there by failing to comply with IPT. The FGD results also revealed that the majority of the respondents did not know the causes of malaria. This should explain why a significant number of people (38.6 percent) call malaria as just an illness. This meant that there was knowledge deficit on the cause and definition of malaria. The FGD also revealed that respondents did not seem to differ on the effects of malaria on pregnancy from all the four health facilities. The most common effect mentioned was abortion. This requires intensive involvement of the MOH and health care providers to sensitize women to attend ANC early and regularly.

5.6.2 RELATIONSHIP BETWEEN CLIENTS' KNOWLEDGE OF MALARIA AND ADHERENCE

The study revealed that there was a statistically significant association between client's knowledge and adherence. The study has shown that the majority of clients (98.9 percent) who were knowledgeable (on how to tell that one had malaria) were more likely to adhere to IPT-SP than those who could not. The multivariate analysis also revealed that respondents who could tell that a person had malaria were 7.59 times more likely to adhere to SP compared to those who could not. The FGD revealed that respondents from all the four health facilities were knowledgeable on how to tell that a person has malaria. The common symptoms mentioned by the respondents from all the four health facilities were feeling cold, vomiting and body hotness. If this high percentage of respondents with appropriate knowledge could be put into practice (in terms of regular attendance in antenatal clinics, health care providers providing SP to mothers, and counseling of respondents against myths), then the target adherence of 90 percent is likely to be achieved. A total of 38 percent of the clients (who were not knowledgeable and did not adhere to IPT-SP) are at risk of severe malaria and would require attention by health care providers closest to their homes.

The study showed that there was no significant statistical association between knowing the number of times to take SP in pregnancy and adherence.

5.6.3 CLIENTS' PERCEPTION ON MALARIA

When asked on clients' perception about malaria as a disease most (59.4 percent) of the clients perceived malaria as a serious condition while 36 percent perceived it as a very serious condition. Out of the 350 clients interviewed 96 percent mentioned that SP was effective in the prevention of malaria in pregnancy. In spite of this knowledge, only 77.4 percent adhered to IPT-SP. This study agrees with the study done by Holz *et.al.*, (2004) in Blantyre (Malawi) who found that inspite of the pregnant women knowing the dangers of malaria coupled with the importance and benefits of taking IPT-SP, they did not adhere to SP.

5.6.4 ASSOCIATION BETWEEN CLIENTS' PERCEPTION ON ATTITUDE OF HEALTH CARE PROVIDERS AND ADHERENCE

The study has shown that there was a significant statistical association between attitude of health care providers and adherence ($p = 0.001$). The study revealed that clients who perceived health care providers' attitudes as being very good (48 percent) were more likely to adhere to IPT-SP than those who perceived them as being good (73.4 percent). Some were saying that the health care providers "*baba fye bwino*", meaning "they are good". The multivariate analysis also revealed that clients who perceived health care providers' attitudes as "*very good*" were 2.64 times more likely to adhere to IPT-SP than those who perceived them as "good". This proves that health care providers should have more communication with pregnant women in the community who do not have competencies to promptly identify malaria at an earlier stage. This can only happen if pregnant women realize that malaria is a killer disease which is transmitted through the bite of a mosquito and not by any other reason.

5.6.5 CLIENTS' REASONS FOR NOT ADHERING TO IPT-SP

The study revealed that the majority (49.4 percent) of the clients said that they attended ANC twice or less, while 27.8 percent said they were not given the remaining doses by health care providers during the ANC visits. Inconsistency by the ANC health care providers is a matter of concern. This could have been due to pressure of work, lack of policy guidelines to remind clients and health care providers. The ANC health care providers may not have given adequate information about the number of visits and the number of doses a woman is supposed to receive during pregnancy; this lack of information is likely to result in non-adherence to IPT. This could lead to complications such as: still births, low birth weight, preterm delivery, and, high mortality (NMCC, CBoH, 2003). The other reason was late presentation of women for antenatal care. This study is similar to the study conducted by Ashwood-Smith *et.al.*, (2002) in Malawi who found that women who presented late for ANC did not adhere to IPT-SP as this reduce the number of ANC visits. Hence, they were given less doses of SP.

5.6.6 MYTHS / TABOOS ASSOCIATED WITH IPT-SP IN PREGNANCY

The common myths revealed by the study were that clients felt sick after taking SP (42 percent); that SP causes abortions (15 percent), body weakness (13 percent) and dizziness (12 percent). The most common myth mentioned during the FGDs was abortion. However, there was no significant statistical association between possessing myths or taboos and adherence to IPT-SP. Unlike the National Malaria Control Centre (2003) which conducted rapid assessment in Lusaka and Chipata, this study did not discover that health care providers were influenced by myths.

5.6.7 EFFECTS OF SP EXPERIENCED BY CLIENTS

About half of the clients (52.3 percent) who received SP had side effects such as body weakness (30.4 percent), felt sick (24.2 percent), and were dizzy (19.3 percent). The other effects mentioned were vomiting, headache and sweating. This study is similar to Ashwood-Smith's findings (2002) in Blantyre, Malawi,

which showed that most women feared taking SP for its side-effects such as dizziness, feeling sick and vomiting. Some mentioned that it caused abortions while others feared rashes. The study also agrees with the study conducted by Parise *et.al.*, (1998) in Kisumu District in Western Kenya which revealed that women reported adverse drug reactions of SP after the first and subsequent doses. The adverse effects included nausea, vomiting, rash, and fatigue. These reactions had resolved by the time of the next follow-up. The current study also revealed that 49.4 percent of respondents were inconsistent in their adherence to SP. There was no variation with the results obtained by FGDs. It is a known fact that SP does have temporary manifestations. It is therefore, mandatory for health care providers at health facilities to explain this to clients to build confidence and to motivate them to attend ANC regularly. There is also need to address this issue during outreach and group discussions at health facilities. Health care providers should explain to antenatal mothers who experience side-effects of SP that the effects are short-lived and that would resolve by the next visit (Parise *et.al.*, 1998). In spite of all the effects experienced by respondents, there was no significant association between effects of SP and adherence in this study.

5.7 ASSOCIATION BETWEEN EPISODES OF MALARIA AMONG PREGNANT WOMEN ON IPT-SP, NUMBER OF TIMES SUFFERED FROM MALARIA AND ADHERENCE

The study has shown that episodes of malaria from the revealed signs and symptoms by respondents was 39.1 percent. Some of the signs and symptoms of malaria mentioned were fever, headache, sweats, chills, weakness and vomiting. This figure (39.1 percent) is too high considering that malaria is a killer disease and contributes to a lot of complications such as anaemia, stillbirths and maternal deaths. Pregnant women are particularly vulnerable to malaria as pregnancy reduces a woman's immunity to malaria infection and increases the risk of illness, severe anaemia and death. For the unborn child, maternal malaria increases the risk of spontaneous abortion, stillbirth, premature delivery and low birth weight, which is a cause of child mortality and anaemia which predisposes

to post partum haemorrhage (CBoH, 2001). The data obtained from Ndola Central Hospital revealed that the causes of admissions to the antenatal ward included malaria and other complications relating to pregnancy such as anaemia. In the first quarter of 2005 the prevalence of malaria in pregnancy was 17.8 percent and 20.6 percent in the second quarter. This indicated that the occurrence of malaria was still high in relation to the preventive measures put in place (Monthly health institution admission tally sheets and daily returns of discharges and deaths tally sheet, 2005). According to the Malaria Indicator Survey (2006), malaria constitutes 40.0 percent of the Infant Mortality Rate (IMR) and 20 percent of the Maternal Mortality Rate (MMR).

The study on episodes of malaria in pregnancy may not be conclusive unless proven otherwise to represent a true occurrence of malaria in pregnancy because there are other conditions, which may present with the same signs and symptoms such as *Hyperemesis gravidarum* where one has general body weakness and vomiting. On the other hand, some pregnant women may not even know that they have malaria because most of the cases of malaria do not have symptoms. In a meeting held by malaria experts at the International Consultation meeting on "Malaria Diagnostics at the Turn of the Century", from 25th to 27th October 2000, in Geneva, experts emphasized that clinical diagnosis alone, the most widely used diagnostic tool is unreliable because the symptoms of malaria are non-specific, overlapping with other febrile diseases. This results in anti-malaria treatment of many patients without malaria, leaving them untreated for the true cause of their illness. Laboratory confirmation of clinical diagnosis is always desirable (except in areas of high transmission) where laboratory diagnosis is confounded by the prevalence of circulating blood parasites in individuals without symptoms (UNDP, World Bank, WHO, 2002). Hence, there is need to carry out a comprehensive study to find out the actual prevalence rate of malaria in pregnancy through laboratory tests to confirm the diagnosis.

The prevalence of malaria among pregnant women at national, provincial and district levels has not yet been established. The statistics available show a block figure of malaria in all age groups. The estimates do not show the specific figures of prevalence of malaria in pregnancy. The national estimates of malaria data should be gender aggregated so as to have estimates on age group, sex and special groups like pregnant women who because of their low immune status during pregnancy are prone to malaria. There is need to conduct a study on the prevalence rate of malaria in pregnancy at national, district and provincial level.

The study has revealed that the majority (62.7 percent) of clients who adhered to IPT-SP did not suffer from malaria. In spite of this there was no significant association between episodes of malaria and the number of times a client suffered from malaria in relation to non-adherence to IPT-SP.

CHAPTER 6

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study revealed that most (98.9 percent) of the clients utilized SP while 77.4 percent adhered to IPT-SP. The majority of the client-respondents were aged between 20 – 29 years (58.3 percent) and were mostly married. Most (48.6 percent) of the clients had secondary education. In spite of their level of education, only 8.6 percent were in formal employment. This shows that the majority of respondents depended on their spouses and others who were also earning a low income.

The study has shown that there is a statistically significant association between marital status and adherence to IPT-SP. Respondents who were married were more likely to adhere to IPT-SP than those who were single. Most of the clients (81.2%) had their first SP in pregnancy between four and six months of pregnancy. The study results also show a statistically significant association between income and adherence. Respondents who earned an income of between K200 000 – K499 999 were less likely to adhere to SP than those with high income.

Multivariate analysis revealed that respondents who could tell that a person has malaria were 7.59 times more likely to adhere to SP compared to clients who could not. The study has also shown that clients who started receiving SP at six months of pregnancy and below were about five times more likely to adhere to SP compared to respondents who received SP after six months. Clients who perceived health care providers' attitudes as being very good were 2.64 times more likely to adhere to IPT-SP than those who perceived them as being good.

The study revealed that 60.9 percent took SP immediately at the health facility while 38 percent took it from home. Among respondents (38 percent) who took SP from home, the majority (73 percent) gave reasons such as were given by

staff to take from home while 27 percent liked taking SP at home to avoid effects. It would be more significant if they failed to take SP at home.

The study revealed that 22.6 percent did not adhere to IPT-SP. Reasons given were that the majority (49.4 percent) attended ANC twice, or, less; 27.8 percent were not given SP by health care providers; and, 12.7 percent booked late at ANC. This shows that there is knowledge gap on how many times to attend ANC and to receive SP during pregnancy. Hence, timing of first ANC attendance is an important factor.

The study revealed that the 90 percent target set by the MOH to have all pregnant women adhere to IPT-SP was not met. Therefore, there is need by districts to strengthen early ANC attendance and make positive, health care providers' attitude in sensitizing pregnant women to receive IPT-SP.

Both qualitative and quantitative results clearly indicate that there is a big gap between the concept of malaria and its causes among respondents, and, health care providers' approach towards communities. On the other hand, the study results reveal that the majority of the respondents (97.4 percent) can tell the signs and symptoms of malaria and that SP works (96 percent) in the prevention of malaria. If this high percentage of knowledge by respondents can be put into practice (in terms of early and regular attendance at antenatal clinics, health care providers providing SP to clients, and counseling of respondents against myths), then the target adherence of 90 percent is more likely to be achieved.

The study has shown that despite health services being closer to the people, they have failed to make use of these facilities. Non-adherence to SP, lack of confidence in health care providers, coupled with lack of communication have revealed that people are still living in a century of old concepts of malaria (like it is just a disease resulting through contaminated water, rather than, a killer disease resulting from the bite of the female *Anopheles* mosquito). Despite all

these short-comings, one can say with confidence that with strong political support, an increasing donor-funding, vigorous training of health care providers, and, openness to the community through health education, Zambia will definitely be able to change the behaviour-pattern of the people to support positive healthy living.

For the sake of development and building of relationships, education plays a very important role which in turn increases knowledge and understanding among the recipients of health services. If Zambia wants to reduce the burden of malaria, it is vital to advocate for behaviour-change. This can only be done through dialogue, positive attitudes and role-plays. The health information system should be non-technical (user-friendly) through flaw-less and simple language to be understood by all members of the family and community. District administrative structures and community involvement are key factors for achieving long-term sustainability.

Finally, governance of a country can only be successful if it succeeds in caring for its people and Zambia has to do just that.

6.2. RECOMMENDATIONS

1. The Ministry of Health (2005) states that SP should be taken as DOT at any health facility in order to ensure that the women receive all the three doses of SP. The study revealed that most of the pregnant women experienced some side effects and that they preferred taking SP after a meal to lessen the effects. Clients must be assured that these are more temporal symptoms and are reduced when taken with or soon after a meal. In addition, the MOH should re-enforce DOT strategies to extend SP (IPT) to cover those who fail to come to the health facilities. This could be done through maintenance of records and follow up of those who do not come to the health facilities.
2. The study revealed that some pregnant women did not take the required three doses of SP because they attended ANC only twice or less; were not given by health care providers the remaining doses; or, presented late in pregnancy at the ANC. In addition, during pregnancy women do not know they are infected with malaria; that is why they call it “*just an illness.*” This requires intensive involvement of the MOH and health care providers to sensitize and encourage pregnant women to attend ANC early and regularly so that by the end of three visits they would have received the three SP doses.
3. The study revealed that the episode of malaria among pregnant women on IPT-SP was 39.1 percent. This figure is far too high considering the effects that malaria has in pregnancy. A comprehensive research on the prevalence of malaria in pregnancy should be carried out using confirmatory tools such as laboratory tests for malaria parasites. This is important as most of the clients who had malaria in pregnancy diagnosed it using criteria for clinical presentation of malaria. There could be other underlying conditions in pregnancy, which could have similar symptoms of malaria such as *Hyperemesis gravidarum* and other febrile conditions. A nation wide study should be carried out on prevalence of malaria in pregnant women.

4. The study also revealed that the 90 percent target set by the MOH (2005) to have all pregnant women adhere to IPT-SP was not met. Therefore, the health care providers should intensify the information, education and communication (IEC) during the antenatal clinics to clients with emphasis on DOT. In addition, the health care providers should ensure that the SP is available all the time at the health facilities. The families need to be sensitized that DOT approach is cost-effective for reducing episodes of malaria during pregnancy and keep expectant women in good health.

5. The study revealed that the majority of clients were given SP by health care providers to take at home. This was confirmed by health care providers using the checklist, which revealed that about half of the health facilities had erratic water supply and had no cups for the clients to use. Therefore, it is strongly recommended that the MOH ensure that the health facilities are provided with clean water supply and enough cups for taking SP as DOT to enhance attainment of the 90 percent target set for client adherence (MOH, 2005). In addition, the Directorate of MOH responsible for Reproductive Health has to monitor performance.

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Appendix 1

CONFIDENTIAL

TITLE: DETERMINATION OF LEVELS OF UTILIZATION AND ADHERENCE TO INTERMITTENT PRESUMPTIVE TREATMENT (IPT) – SP AMONG PREGNANT WOMEN

Area Code:-----

District Code -----

Name of Interviewer -----

Date:-----

INSTRUCTIONS TO RESEARCH ASSISTANTS

1. Introduce your self before starting the interview.
2. Explain the purpose of the study and ask for permission to interview the participant.
3. Make the respondent sign the consent before you start the interview
4. Assure confidentiality.
5. Participants should not be forced to be interviewed.
6. Where the respondent is reluctant or unwilling to take part, politely leave her.
7. Do not write the name of the respondent on the questionnaire.
8. Tick or circle the correct answers where they are provided.
9. Write the responses in the spaces provided.
10. Thank your respondents at the end of each interview.

Appendix 2

INFORMED CONSENT FOR THE CLIENT

Dear Participant,

The purpose of this study is to determine the levels of utilization and adherence to Intermittent Presumptive Treatment with Sulfadoxine Pvrimehamine (Fansidar) among pregnant women. Fansidar is a drug which is recommended in pregnancy by the government to prevent the mother and the unborn baby from Malaria. Data is required from you on knowledge and factors associated with adherence to Fansidar.

Voluntary Participation

Your participation in the study and giving of consent does not mean violation of your rights. You are free to withdraw from the study at any time you wish to do so. You have the right to ask or seek any clarification from the researcher whenever you wish to do so. Your withdrawal will not affect the standard of care which you normally receive at this health centre /Hospital without participation.

Risk and benefits

There is no risk involved in this research. This is a questionnaire based research where questions will be asked regarding the levels of utilization and adherence to fansidar. There are no direct benefits to you by participating in this study but the knowledge and information you will gain by your participation will help to protect yourself and the unborn baby from malaria. There is no monetary gain.

Confidentiality

During your participation the information gathered will be highly confidential. The research information will be disseminated to relevant authority but no such information will be released which will lead directly to you.

Accountability to participate

By now you have understood the nature of this research and its implications. If you desire to participate in the study, please put your signature or thumb print where indicated below: -

Signature or Thumb Print ----- Date -----
Participant

Signature ----- Date -----
Interviewer

For the fifteen-year-olds (after child gives consent), the parent or guardian signs.

Signature or thumb print ----- Date -----
Guardian / Parent

If you wish to seek any clarification, please call at the following address: -

Ms Julia Shachakanza
Ndola Central Hospital
School of Midwifery
P/A Ndola, Zambia.
Tel. no. 095751815

For any ethical clarification contact: -

The Chairman

The University of Zambia

Research Ethics Committee

P.O. Box 50110

Lusaka, Zambia.

E-mail: unzarec@zamtel.zm

Fax: +260-1-250753

Tel. no. 01 256067

Appendix 3

QUESTIONNAIRE FOR CLIENTS

**STRUCTURED INTERVIEW SCHEDULE FOR CLIENTS ON
DETERMINATION OF LEVELS OF UTILISATION AND ADHERENCE TO
IPT – SP AMONG PREGNANT WOMEN**

INSTRUCTIONS

1. Answer all questions
2. Tick or circle the correct answers where they are provided
3. Write answers for the other questions in the spaces provided.

SECTION A:

FOR OFFICIAL USE

DEMOGRAPHIC DATA

1. Age of respondent ----- []

2. Marital status []
 1. Single
 2. Married
 3. Separated
 4. Divorced
4. Widowed

3. Educational level []
 1. None
 2. Primary grade -----
 3. Secondary grade -----
 4. College / university

4. Occupation []
1. House wife
 2. Student
 3. Employed
 4. Self employed
5. Type of work ----- []
6. Income []
1. Less than K200 000 per month
 2. K200 000 to 499 999 per month
 3. K500 000 to K799 999 per month
 4. K800 000 to K999 999 per month
 5. K1 000 000 and above per month
7. Religion []
1. Christian
 2. Buddhist
 3. Moslem
 4. Others, specify -----
8. Where do you stay? []
-

SECTION B:

PARITY

9. How many pregnancies have you had before? []
1. one
 2. two
 3. three
 4. four
 5. five and above pregnancy

SECTION C:

EXISTING KNOWLEDGE OF THE MALARIA DISEASE

10. What is Malaria? []

11. How would you tell that a person has malaria? []

12. What are the causes of malaria? []

13. How is malaria transmitted from one person to the other? []

1. Bite of infective mosquitoes
2. Close contact with malaria patient
3. Unsafe drinking water
4. Bad smell
5. Eating contaminated food
6. Do not know
7. Others, specify -----

14. What are the effects of malaria in pregnancy? []

1. Anaemia
2. Loss of weight
3. Rapid growing of Pregnancy
4. Health mother and baby
5. Others, specify -----

15. Do you know that you can have malaria in pregnancy even without symptoms? []
1. Yes
 2. No
 3. I do not know

SECTION D

PREVENTION AND CONTROL OF MALARIA

- 16 Is malaria preventable? []
1. Yes
 2. No
 3. Do not know

17. Which of the following measures do you use for prevention of malaria in pregnancy? []

1. Insecticide Treated Nets
2. Fansidar
3. Spraying
4. Closing windows early
5. None of the above
5. Others, specify -----

18. Which of the following drugs are used for prevention of malaria in pregnancy? []

1. Chloroquine
2. Fansidar(SP)
3. Panadol
4. Do not know
6. Others, specify -----

19. In your opinion do you think fansidar works in prevention of malaria in pregnancy? []

1. Yes
2. No
3. I do not know

20. Give reasons for your answer in question 19. []

SECTION E:

MODERN AND TRADITIONAL BELIEFS

21. When you have malaria where do you go for treatment? []

1. Health center
2. Hospital
3. Health post
4. Traditional healer
5. Church for prayers
6. Buy drugs from the shops
7. Others, specify -----

22. Mention traditional remedies of malaria that you know []

23. Mention the myths that you know which are associated with Fansidar (SP) []

1. Causes abortion
2. Baby dies in the womb
3. Causes bleeding
4. Others, specify -----

SECTION F:

**ACCESSIBILITY, ACCEPTABILITY, AVAILABILITY
AND LEVELS OF UTILISATION OF IPT -SP**

24. How long does it take you to reach the health facility? []
1. Less than 30 minutes
 2. 30 – 59 minutes
 3. 1 –1 hr 59 minutes
 4. 2 – 3 hrs
25. What mode of transport do you use to reach the health facility? []
1. By walking
 2. By bus
 3. Personal vehicle
 4. Others, specify -----
26. When did you start attending antenatal clinic? []
1. below 3 months
 2. 3-4 months
 3. 5-6 months
 4. 7-8 months
 5. 9 months
 6. Never attended
27. Are you given Fansidar (SP) at the health center during the antenatal visits? []
1. Yes
 2. No
 3. Do not know

28. If **yes** to the above question (27) when do you take fansidar (SP)? []

1. Immediately at health center
2. Later at home
3. At night
4. Do not take it

29. If SP is not taken immediately at health centre, explain why []

30. What effects do you experience after taking fansidar? []

1. I feel dizzy after taking it
2. I vomit after taking it
3. I develop a headache after taking it
4. I develop a rash on my body
6. My body feels weak
7. Others, specify -----

31. At what period of pregnancy were you given the first fansidar? []

-----months

32. How many times did you receive fansidar (SP) in this pregnancy? []

1. None
2. Once
3. Two times
4. Three times
5. Four times

33. How many times are you supposed to receive fansidar in pregnancy? []
1. None
 2. Once
 3. Two times
 4. Three times
 5. Four times
 6. Do not know

34. If SP was taken less than 3 times, explain why []
-
-

SECTION G:

PREVALENCE OF MALARIA DURING THE PREGNANCY

35. Did you ever suffer from malaria during this pregnancy? []
1. Yes
 2. No
 3. Can not remember
36. If yes to above question (35) how many times? []
1. Once
 2. Two times
 3. Three times
 4. Four times
 5. Five times and more
 6. Cannot remember

37. If you suffered from malaria during this pregnancy,
what drugs were you given for treatment? []
1. Fansidar
 2. Quinine
 3. Coatem
 4. Panadol
 5. Cannot remember
 6. Others, specify -----
38. In your own opinion how would you classify malaria? []
1. Very serious
 2. Serious
 3. Not serious
39. What is your perception on the attitudes of the health providers? []
1. Very good
 2. Good
 3. Poor
 4. Very poor
40. Give reasons for your answer in question 39. []
-
-

THANK YOU FOR ANSWERING

END OF INTERVIEW

Appendix 4

TITLE: DETERMINATION OF LEVELS OF UTILISATION AND ADHERENCE TO INTERMITTENT PRESUMPTIVE TREATMENT (IPT) – SP AMONG PREGNANT WOMEN IN NDOLA URBAN DISTRICT

Area code -----

District Code -----

Name of interviewer -----

Date -----

CHECK LIST FOR THE HEALTH FACILITIES ON AVAILABILITY OF FANSIDAR AND OTHER ITEMS

	ITEM	PRESENT	ABSENT	COMMENT
1	SP (fansidar) stocks on bin cards			
2	Clean cups			
3	Plain drinking water			
4	Guidelines on IPT Policy			
5	Antenatal cards			
5	Directly Observed therapy for SP (DOT)			

Appendix 5

FOCUS GROUP DISCUSSION GUIDE

TOPIC: DETERMINATION OF LEVELS OF UTILIZATION AND ADHERENCE TO IPT – SP AMONG PREGNANT WOMEN

INSTRUCTIONS TO THE RESEARCH ASSISTANTS

1. Welcome the participants warmly.
2. Introduce yourself and the recorder to the group. Ask the participants to introduce themselves.
3. Explain the purpose of the discussion.
4. Assure participants of confidentiality of information and encourage them to feel free during the discussion.

QUESTIONS FOR DISCUSSION

1. What is malaria?
2. What are the signs and symptoms of malaria in pregnancy?
3. What are the effects of malaria in pregnancy?
4. When did you start antenatal visits?
5. What do you know about fansidar?
6. When did you receive the first fansidar in pregnancy?
7. How many times did you receive fansidar in this pregnancy?
8. How many times are you supposed to receive fansidar in pregnancy?
9. Why should a pregnant woman take fansidar?
10. Did you suffer from malaria during this pregnancy? If so how many times?
11. Do you think fansidar is effective in the prevention of malaria in pregnancy?
12. How is malaria transmitted from one person to another?
13. What are the complications of malaria in pregnancy?
14. What are the myths associated with fansidar?
15. Did you experience any side effects after taking fansidar? If so what were the effects?

THANK YOU FOR YOUR RESPONSES



Appendix 6

**THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE**

Telephone: 252641
Cell: 097 849302

Assistant Dean's Office (PG)
P.O. Box 50110
LUSAKA

27 November 2006

Ms Julia Shachakanza
C/O Community Medicine
UTH LUSAKA

Dar Ms Shachakanza

Re: CORRECTED COPY OF YOUR RESEARCH PROPOSAL

I write to let you know that I have read through your research proposal and noted that the necessary corrections have been done as directed by the panel of Graduate Proposal Presentation Forum of 23rd March 2006.

Congratulations!

Yours faithfully

Mr Kasonde Bowa MSc (Glasgow) MMed FRCS (Glasgow)
ASSISTANT DEAN, POSTGRADUATE

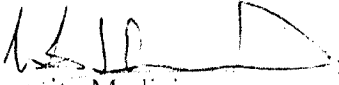
cc. Chairperson, Research Ethics Committee

Appendix 8

The University of Zambia
School of Medicine
Department of Community Medicine
P.O. Box 50110
Lusaka.

21st June, 2006

The Director
Ndola District Health Management Team
P.O. Box
Ndola

u.f.s. Head

Department of Community Medicine
University Of Zambia
Lusaka

Dear Sir,

RE: PERMISSION TO CARRY OUT A RESEARCH STUDY

I am a student undertaking a Master's degree in Public Health at the University of Zambia, School of Medicine. One of the requirements of this program is to carry out a research study.

I hereby seek permission to carry out a study in your District on, "**Determination of Levels of Utilization and Adherence to Intermittent Presumptive (Preventive) Treatment (IPT) with Sulfadoxine Pyrimethamine (SP) among Pregnant Women**".

I intend to base my study in Chipokota Mayamba, Twapia and New Masala health centres. The pilot study will be carried out at Chipulukusu health center. During my study I shall interview antenatal women in their ninth months and postnatal women as well as the health providers in the health delivery facilities of the mentioned areas.

Your consideration will be highly appreciated.

Yours Faithfully,



Julia Shachakanza
MPH STUDENT


Appendix 9

The University of Zambia
School of Medicine
Department of Community Medicine
P.O. Box 50110
Lusaka.

21st June, 2006

The Executive Director
Ndola Central Hospital Board of Management
P/A Ndola

u.f.s. Head
Department of Community Medicine
University Of Zambia
Lusaka


HEAD COMMUNITY MEDICINE
SCHOOL OF MEDICINE
UNIVERSITY OF ZAMBIA
P.O. BOX 50110, LUSAKA.

Dear Sir,

RE: PERMISSION TO CARRY OUT A RESEARCH STUDY

I am a student undertaking a Master's degree in Public Health at the University of Zambia, School of Medicine. One of the requirements of this program is to carry out a research study.

I hereby seek permission to carry out a study at your institution on, "**Determination of Levels of Utilization and Adherence to Intermittent Presumptive (Preventive) Treatment (IPT) with Sulfadoxine Pyrimethamine (SP) among Pregnant Women**".

During my study I shall interview antenatal women in their ninth months and postnatal women as well as the health providers in the antenatal clinic.

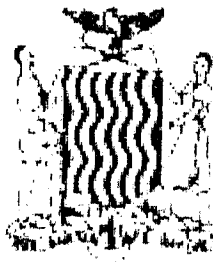
Your consideration will be highly appreciated.

Yours Faithfully,



Julia Shachakanza
MPH STUDENT

Appendix 10



Republic of Zambia
MINISTRY OF HEALTH
Ndola District Health Office

Naidu Close Kanini
P.O.Box 70672
Ndola - Zambia

All communication to be addressed to
District Director of Health

Telephone: 610306
Telefax: 612819
Cell: 097-872947

Internal Memo

To The In-charge
 - Twapia, New Masala, Chipulukusu & Chipokota Mayamba

From Manager Planning and Development

Date 17th July 2006

Re **Permission to Undertake a Study – Julia Shachakanza**

Refer to the above.

The bearer of this letter, Mrs Julia Shachanza has been granted permission to undertake a study on Determination of Utilization of Inter-mittent Presumptive Treatment – SP among women in Ndola Urban District.

Please render her the necessary help that she may need.

A handwritten signature in black ink, appearing to be 'L. S. Nyendwa'.

Dr L. S. Nyendwa

Appendix 11



NDOLA CENTRAL HOSPITAL MANAGEMENT BOARD

POSTAL AGENCY
NDOLA

TEL: 611585-9
FAX: 612204/612362
E-mail: neh@zamnet.zm

12th July, 2006

Mrs Julia Shachakanza
University of Zambia
School of Medicine
Department of Community Medicine
P.O Box 50110
LUSAKA

Dear Ms. Shachakanza

RE: FIELD ATTACHMENT – RESEARCH STUDY

Refer to the above subject and your application of 21st June,2006.

I am pleased to inform you that management has no objection for you to come and do your field attachment at this institution from 17th July to 15th September,2006.

By copy of this letter, the Nursing Services Manager and Heads of Departments are hereby informed to avail you an opportunity to carry out the research.

Yours faithfully
NDOLA CENTRAL HOSPITAL


R. Makwele
A/HUMAN RESOURCES MANAGER
FOR/EXECUTIVE DIRECTOR

cc: Executive Director
Human Resources Officer– Training
File