USE OF INTERMITTENT PREVENTIVE TREATMENT OF MALARIA AMONG WOMEN ATTENDING FEE PAYING AND FREE ANTENATAL CLINICS IN SELECTED LOCAL GOVERNMENT AREAS IN PARTS OF OYO STATE.

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DEDICATION

I dedicate this work to God Almighty, the Father of all creation, Jesus my saviour and God the Holy Spirit. It has been reassuring working with you and I never would have known what I would have done without you my God. Thanks for the grace to trust you and believe you that you will see me through, which you have accomplished.

To Dr. Martin Meremikwu and his family, many thanks for the inspiration and encouragement and also my colleagues who stood with me during this period of transformation. To my wife and children, you are the treasures of my life. You made me believe in myself even when I could not see any reason to thrust forward. I remember and cherish those night prayers. To God be the Glory, for He has crowned all our efforts with success.

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ABSTRACT

Malaria in pregnancy is a public health concern. Studies show that use of Intermittent Preventive Treatment (IPT) of Malaria in pregnancy using Sulphadoxine-Pyrimethamine (S-P) and Insecticide Treated Bednets (ITNs) as Roll Back Malaria (RBM) interventions can substantially reduce malaria-related morbidity. RBM policy of providing every pregnant woman attending government Ante Natal Clinics (ANC's) free S-P and those with first pregnancies, free ITN, as incentives exclude those attending private ANCs. Few studies have considered the malaria knowledge and benefits of chemoprophylaxis in pregnancy, constraints to IPT access and how these factors influence willingness to adopt the intervention. This study assessed the factors that influence the adoption of IPT by pregnant women attending ANC's in Akinyele, Ibadan South-East and Ibadan North Local Government Areas in Oyo State.

The study was a cross sectional survey. Three hundred and five women, who received both S-P and ITN and delivered at the fee paying and free ANC's were selected using stratified sampling technique. The study sample consists of respondents who attended fee paying 202(66%) and free ANC's 103(34%). Data collection was by means of a pre-tested, semi structured questionnaire administered at the respondents' homes. Issues explored in the questionnaire included respondents' socio-demographic characteristics, malaria knowledge and perception, vulnerability, cost and willingness to adopt IPT. Data was analysed using SPSS 10.0 for Windows.

The mean age of the respondents in Fee Paying Ante Natal Clinics (FP-ANC) and Free Ante Natal Clinics (F-ANC) were 28.7 years (SD±4.77) and 27.8 years (SD±4.94) respectively. Overall, 287(94%) of them were married and 214(70%) had post primary education. The mean score based on a 5-point malaria knowledge scale was 3.75 (SD±0.80). The FP-ANC group had a higher mean knowledge score of 2.67(SD±0.91) compared with the F-ANC group with a score of 2.10(SD±0.89). The mean knowledge scores based on an 8-point scale relating to the benefits of chemoprophylaxis among the FP-ANC and F-ANC respondents were 2.11 (SD±0.18) and 2.18 (SD±0.16) respectively. (p=0.01). Furthermore, 24(11.9%) of the respondents from FP-ANC bought ITN compared with 3(2.9%) from F-ANC. Twenty-one respondents from FP-ANC and three from F-ANC consistently slept under these nets. 188(93%) of the respondents from FP-ANC and 16(15.5%) from F-ANC were willing to pay for S-P and ITN during future pregnancies. Barriers to ITN

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use among FP-ANC respondents included lack of skill on net use 52(26%), use of other preventive measures 58(29%) and perception that ITN use is only for the sick 61(30%). The barriers among FP-ANC respondents were the use of alternative prevention methods 15(15%), cost 18(37%) and non availability of ITN 27(28%). Respondents willingness to use SP and ITN in the future was significantly related to knowledge of malaria (p 0.000), knowledge of chemoprophylaxis (p 0.001), parity (p 0.000) and occupation (p 0.000).

The study shows that the respondents had a fair knowledge of malaria causation, prevention and benefits of chemoprophylaxis. Malaria programme managers should promote compliance with RBM policy regarding malaria prevention in pregnancy. They should also promote health education programme aimed at upgrading expectant mothers' knowledge and skills relating to malaria prevention in pregnancy.

Key words: Malaria, pregnancy, Chemoprophylaxis, Sulphadoxine Pyrimethamine, Insecticide Treated-Nets

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CERTIFICATION

I certify that this project was carried out by ORJI, Bright Chukwudi in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan under my supervision.

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GLOSSARY OF ABBREVIATIONS

ACT	Artemisinin Combination Therapy
ANC	Ante Natal Clinics
BCC	Behaviour Change Communication
CBO	Community Based Organization
CHEWs	Community Health Extension Workers
CHOs	Community Health Officers
CQ	Chloroquine
CT	Combination Therapy
EHOS	Environmental Health Officers
FANC	Free Ante Natal Clinics
FBO	Faith Based Organization
FMOH	Federal Ministry of Health
FPANC	Fee Paying Ante Natal Clinics
HBM	Health Belief Model
IPT	Intermittent Preventive Treatment
IPT1	Intermittent Preventive Treatment (First dose)
IPT2	Intermittent Preventive Treatment (Second dose)
ITNs	Insecticide Treated Bed-nets
LGA	Local Government Area
MIP	Malaria in pregnancy
MOH	Medical Officer of Health
MoH	Ministry of Health
NDHS	National Demographic Health Survey
NGO	Non Governmental Organization
NPC	National Population Commission
NPHCDA	National Primary Health Care Development Agency
PHC's	Primary Health Care Centers
PMVs	Patent Medicine Vendors
RBM	Roll Back Malaria
RH	Reproductive Health
S-P	Sulphadoxine pyrimethamine

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TBAs	Traditional Birth Attendants
UNICEF	United Nations Children Education Fund
VHVW	Village Health Volunteered Workers
WHO	World Health Organization

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CHAPTER ONE
INTRODUCTION

1.1 Background to the study

Malaria is a major global public health concern which affects approximately 40 per cent of the world's population (FMOH, 2002). Although everyone in a malarious environment is susceptible to the disease, the group mostly at risk of the disease includes the children under five years of age and the pregnant women. It is estimated that more than a billion women live in malaria transmission areas and are thus exposed to the risk of malaria during pregnancy (Menendez, 1995). The global malaria disease burden includes 300-500 million annual hospitalizations, two to three million deaths, poverty and inequity (WHO 1998). Malaria in pregnancy is one of the leading causes of anemia in women living in malarious areas. It is also known to be responsible for intrauterine growth retardation (IUGR), abortion, stillbirth, infant and maternal mortalities (Steketee, Nahlen, Parise and Menendez, 2001).

About nine out of ten cases of malaria morbidity and mortality are in the Sub-Saharan Africa. In spite of the control measures to reduce the impact of the disease, it still accounts for 20% of annual deaths among the under-five children. It has been noted that about US$12 million annual health expenditure by African governments, and close to 25% annual income of most impoverished families are spent on the disease prevention and treatment. Malaria has reduced the gross domestic products of the African continent by 32% (WHO, 2000).

In Nigeria, malaria in pregnancy accounts for 1,500 deaths annually (11% of Maternal Mortality). It accounts for 1 in 4 cases of anaemia, and 1 in 10 babies being born with low birth weight. It reduces by 1% the country's Gross National Domestic Product (GNDP) annually (FMOH 2002). Pregnant women, especially those who are pregnant for the first time and their fetus are at a high risk of the dangers of malaria. Malaria control in pregnancy in endemic zones has always been an integral component of Ante-natal Clinic with a weekly or daily chemoprophylaxis, using dapsin, metapton, proguinil and Chloroquine and this intervention is known to be effective (Garner, 2001). However, non-compliance to the drug regimen (proguinil

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and chloroquine) and the emergence of resistance of strains of parasites to chloroquine which are cheap and affordable drugs has reduced the benefits of the intervention (Pamosian, 2005). Therefore, there is a growing concern on the most effective and affordable interventions to reduce malaria and its deleterious consequences.

Due to the African malaria burden, the African Heads of States in a historic summit in Abuja endorsed the Roll Back Malaria initiative in April 2000. Roll Back Malaria (RBM) is a WHO intervention initiative. It is a combination of strategies which include, the use of multiple prevention of malaria through chemoprophylaxis known as Intermittent Preventive Treatment (IPT) of malaria in pregnancy using sulfadoxine-pyrimethamine (SP) and insecticide treated bed nets (ITNs). The recommendation is that during 2 out of 4 routine ante natal clinic visits, pregnant women should be given a treatment dose of sulphadoxine-pyrimethamine (3 tablets) at an interval of at least one month, on each of the selected visits starting from the second trimesters (16 weeks when the baby would have quickened in the uterus). The tablets should be swallowed under direct observation of the health facility staff. The other component of IPT is to get the pregnant women sleep under Insecticide Treated bed nets. Field trials have shown that Intermittent Preventive Treatment of malaria using sulfadoxine-pyrimethamine could significantly reduce the effects of malaria in pregnancy to the mother and the unborn baby (Garner, 2001). Furthermore the use of ITNs led to significant reductions in child mortality (Lengeler, 2004).

In this study, efforts are directed at assessing the factors that influenced pregnant women attending government owned and private ante natal clinics to access and adopt the intervention in Akinyele, Ibadan South-East and Ibadan North Local Government Areas, Oyo State Nigeria. The three selected local government areas share common malaria prevalence.

Example, Akinyele Local Government lies between the rain forest and guinea land region of Ibadan (Stiffan and Okafor, 1983) the rainy season is at the peak in the month of June-July. It shares in the environmental sanitation and socio economic problems of Ibadan metropolis. Flood and drainage, garbage and sewage disposal systems do not exist. During the rainy season, a greater part of the LGA is flooded. Mosquito breeding is high and 2000 DSN record of the NOH showed that malaria ranks highest among hospital attendance in the year under review.

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Ibadan South East local Government Area malaria Prevalence show that the area is highly congested and over-crowded with an average of 150 persons per 10-16 houses per acre of land (Adelaja, 2003). The Local Government Area consists of inner core and traditional areas. The inner core is mostly a slum and inhabited by the indigenes who are often of low economic status and constitute the urban poor (Fawole et al. 2001). The houses were constructed in unplanned fashion and with waste disposal challenges characterized by poor sanitary conditions, narrow streets which turn into recessional markets. Refuse waste from the market, local eateries and domestic refuse are dumped into Ogunpa river and other streams.

The pattern of settlement does not promote effective disposal of garbage and sewage systems and the Local Government Council lacks political will and equipment to manage refuse and sewage disposal. The environment promotes breeding of mosquitoes. Malaria is a prevalent disease in this local government and responsible for the highest hospital attendance in the year 2001 (Awobiyi., 2003).

The study of malaria prevalence in Ibadan North shows that water supply, drainage and incessant power cuts are remarkable problem of the area. The housing pattern of the area is wholesome and a sharp contrast to the inner core hence, some of the areas in this area are classified by the specialist as peripheral environment. Malaria is prevalent and a leading cause of hospital attendance in the year 2003 (Moll, 2003).

1.2 Statement of the Problem

Intermittent Preventive Treatment using sulfadoxine-pyrimethamine and insecticide treated bed nets is still new in Nigeria. In a National survey, the use of IPT with sulfadoxine pyrimethamine among pregnant women was found to be 12% and ITN ownership among households 2%. While the percentage of pregnant women who slept under insecticide treated bed nets the night before the survey was 1.4% (NDHS, 2003). The Federal Government of Nigeria through the Federal Ministry of Health has demonstrated a strong political will and commitment in adopting IPT with S-P as the national strategy for malaria control in pregnancy (FMOH, 2002). However, few studies have been done in Nigeria to evaluate the pregnant women's malaria knowledge (causes, dangers of malaria in pregnancy, importance of chemoprophylaxis, perceived susceptibility, seriousness and threat. Also, the

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perceived benefits and constraints in the use of IPT and how these influence pregnant women's willingness to adopt the recommended behaviour have not been assessed.

Furthermore, the introduction of user-fees by most governments of the developing countries due to decline in government revenues has increased concern on the fight against malaria in pregnancy. User fees form part of the Bamako initiative, an attempt which aims at cost recovery to ensure drugs availability (Adeniyi, Ekpeyong , Omololu, Moddy, Omotade, Ghiasha, Ajuwon, Ogundoke, 1997). The adoption of IPT using sulphadoxine-pyrimethamine and insecticide treated bed nets with user-fees during ante-natal clinic attendance faces some crucial challenges.

In Oyo State, there is free health services scheme at the primary health care level controlled by the Local Government Areas while in the secondary health care level run by the State Government, not all drugs are free (MOH 2002). Sulphadoxine-pyrimethamine (S-P), the drug of choice for the intervention is amongst the drugs subsidized by the state government. There is therefore, the need to understand the influence of charging user-fees on S-P and if so amongst the women attending the secondary and primary health care facilities. This study assessed in greater details the factors influencing the use of IPT among pregnant women in second and third trimesters receiving ANC services in fee paying and free ante-natal clinics in Oyo State.

1.3. Justification

The study is justified in the following reasons. First, it will enable the identification of the factors influencing the use of IPT by pregnant women in second and third trimesters receiving ANC services in fee paying and free ante-natal clinics and suggest how best to modify them to promote the adoption of the intervention.

Second, the study will provide knowledge of the pattern of pregnant women's perceived susceptibility, threats, benefits of chemoprophylaxis using S-P and benefits of ITN use. Knowledge of these will constitute baseline information for policy formulation regarding wide implementation of IPT across the nation.

Third, the findings of this study will be useful for designing health education programme for pregnant women and health providers in the reduction of malaria in pregnancy.

Finally, the study will provide answers to the following

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research questions

i. What is the level of IPT awareness among pregnant women receiving ante-natal services in fee paying and free ante natal clinics?

ii. What do pregnant women that attend fee paying and free ante natal-clinics know about causes, prevention, dangers of malaria in pregnancy, and importance of chemoprophylaxis in pregnancy?

iii. What is the malaria perception of pregnant women in relation to IPT use?

iv. What do the pregnant women attending fee paying and free ante-natal clinics perceive as benefits and constraints to the use of S-P and ITN?

v. What factors influence the willingness of pregnant women attending fee paying and free ante natal clinics to adopt the use of IPT (S-P and ITN)?

1.4. Goal and Objectives of the Study

The goal of this study is to assess the factors affecting the willingness of pregnant women attending fee paying and free Ante natal clinics in the adoption of intermittent preventive treatment (sulphadox ie-pyrimethamine and insecticide treated bed nets). The specific objectives are to:

1. Assess knowledge of malaria (causes, prevention, dangers of malaria in pregnancy and importance of chemoprophylaxis) among pregnant women that attend fee paying and free ante natal clinics.
2. Determine the level of IPT awareness among the respondents.
3. Determine the perceived benefits and constraints in the use of S-P and ITN among pregnant women attending fee paying and free ante-natal clinics.
4. Document pregnant women's perception of the use of Intermittent Preventive Treatment (IPT) of malaria in pregnancy.
5. Assess ITN use pattern among pregnant women attending fee paying and free ante natal clinics.
6. Identify the factors that influence the adoption of the IPT intervention by pregnant women attending fee paying and free ante-natal clinics.

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1.5. Hypotheses

1. There is no significant relationship between respondent's malaria knowledge (causes, dangers of malaria in pregnancy and importance of chemoprophylaxis) and types of health facility used.
2. There is no significant relationship between respondents' socio-demographic characteristics (e.g. age, educational level, parity, occupation and wealth quintile) and willingness to adopt IPT (SP and ITN) use.

1.6. Limitation to the study

The limitation to this study was the few numbers of fee paying health facilities from which study participants were drawn in the fee paying ante-natal clinics group.

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CHAPTER TWO

2.1. LITERATURE REVIEW

The chapter examines malaria epidemiology, Roll Back Malaria initiative of malaria control in pregnancy using Intermittent Preventive Treatment with Sulfadoxine-Pyrimethamine and Insecticide Treated Bed nets. Furthermore, factors influencing the use of IPT for malaria control in pregnancy in perspective of knowledge, cost, socio-economic and demographic variables were examined. The conceptual framework explains the motivating forces in behaviour adoption and willingness to pay for IPT.

2.2. Current Global Malaria Situation

There is a growing public health concern about the increasing burden of malaria. Globally, millions of people are at the risk of malaria in about 1100 countries of malaria transmission areas. It accounts for about 300 -500 course of treatment annually with about 2-3 million deaths, and nine out of ten of the deaths occurring in Sub-Saharan Africa (WHO, 2000). About 25% of the annual malaria deaths are children under-five years of age. It is one of the opportunistic diseases in HIV infection. Malaria is a leading cause of disabilities and poverty in Africa, with an annual expenditure of most African countries on malaria aggregating to about US$12 billion. Pregnant women are at the risk of abortion, stillbirth, anaemia and death.

2.3. The Burden of Malaria in Pregnancy and Control Efforts

Pregnancy in itself though a normal physiological process but presents with physiological and an anatomical problem to a pregnant woman. When a woman becomes pregnant, a lot of changes take place in her body. These changes are accompanied by some early symptoms that include, nausea, vomiting, burning sensation in the pit of the chest or stomach and frequent urination (Obudefe, 2001). Signs may include also, swelling feet, tiredness, low back pain, malnutrition, anaemia and constipation (Weiner, 1987). Some of these symptoms are similar to the symptoms of malaria hence most women especially those pregnant for the first time, find it difficult

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to differentiate early pregnancy symptoms from malaria making them vulnerable and at high risk to the disease.

These changes occur due to some metabolic effects and response to the developing fetus, placenta and uterus resulting in increase production of hormones by the ovaries and placenta, estrogen and progesterone (Chiluiza and Alava, 1998). Estrogen causes an increase in blood volume (Chiluiza and Alava, 1998). This increase in the amount of blood in circulation is usually accounted for by the enlarged uterine-breast, renal, cutaneous vascular systems, and promotes exchange of respiratory gases, nutrients and metabolites between mother and fetus as well as blood clotting in the serum (Chiluiza and Alava, 1998). Furthermore, blood flow in the kidney and liver increases, leading to a more rapid body metabolism, dilated vessels and changes in the body chemistry (Travelersdoctor.com, 2006). As the blood vessels dilate, they become more sensitive to chemical that cause them to constrict, and the body's immune system is slowed down to accommodate the developing fetus (Travelersdoctor.com, 2006).

The lowered immune system predisposes pregnant women to infections such as malaria, pneumonia and other parasite caused diseases (Travelersdoctor.com, 2006). On the other hand, it may also reduce the effects of vaccines and medications given to prevent some of these diseases. This accounts for the reason that high doses of the drugs are prescribed to treat the disease which most often not conducive for the fetus. These call for a concern to prevent the pregnant woman from being infected with disease such as malaria. Research evidence has shown that women of first and second pregnancies are mostly at risk of malaria during pregnancy (Brabin, 1991).

Plasmodium falciparum is the common cause of malaria infection in sub-Saharan African including Nigeria and predisposes pregnant women more to the infection than non-pregnant women with high adverse effects of pregnancy outcomes (Guyatt and Snow, 2004). The parasite is injected through a mosquito bite (female Anopheles) the vector transmitting malaria disease. The transmitted parasites migrate to the liver where it is protected from body defense mechanism. It undergoes reproductive stages and later emerges to invade the red blood cells. If this is not prevented, it destroys the red blood cells causing anaemia and clogging up small blood vessels. When the number of parasites in the blood reaches very high, it may cause cerebral malaria, anaemia, and low blood glucose level to the mother. A study

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in Kilifi, Kenya has shown that a significant association between placental malaria and severe maternal anaemia exist (Shulman, Marshall, Dorman, Bulmer, Cutts, Peshu & Marsh, 2001).

Furthermore, when the red blood cells sludge in the placenta it lead to premature labour, or separation of the placenta. Placentas infected with malaria has been reported to transport antibodies, cytokine and macrophages facilitating an active immune response. It is this immune response that stimulates early labour because of the effects of malaria parasite in the placenta causing abortion (Ismail, Ghani, Menendez, Ventura, Aponte, Kahigwa, Flint, Cardesa and Alonso, 2000).

Research findings have shown that babies born to mothers with malaria-infected placentas are mostly at high risk of low birth weight (Guyatt and Snow, 2001), dehydration, seizures, bleeding disorders and rupture of the spleen (Guyatt and Snow, 2004). High parasite infection (density) of the placenta in association with cellular immune mechanism may cause the consumption of the glucose and oxygen that would have been transported to the fetus hence leading to intrauterine growth retardation (IUGR) (Guyatt and Snow, 2001). Low birth weight due to malaria may result IUGR or premature delivery (Guyatt and Snow, 2001).

In Malawi, malaria in pregnancy accounts for an annual maternal death of 1220 per 100,000 live births, causes anaemia in more than 60% of women during pregnancy and 10% of placental malaria during delivery (Stevens, 2002). In Kenya, the national malaria burden showed all time records of annual maternal deaths of 590 per 100,000 live births, and leaves 6000 pregnant women anaemic especially those pregnant for the first time (40%) (Stevens, 2002). In Nigeria, malaria in pregnancy accounts for 11% of annual maternal mortality and reduces by 1% the country's annual Gross National Domestic Product (FMOH, 2001). These are all preventable. However, it has become increasingly difficult to fight malaria among women of reproductive age and cost has maintained an upward increase (Parise, Ayisi, Nahlen, Schultz, Roberts, Misore, Muga, Ouma, and Slutsker, 1998).

Chloroquine over the years has been the first drug of choice in the treatment and control of malaria. The drug was cheap, available and has saved billions of malaria episodes and lives, but of recent has had its potency eroded by strains of resistant parasites (Parasian, 2005). Pregnancy is stressful, with physiological and physical impacts on the life of the women. Pregnancy lowers the acquired immunity

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to malaria (Olaleke, 2001) and exposes the lives of about 27 million women of reproductive age in Nigeria (NPC, 1991) to the risk of malaria infection. Various interventions and strategies have been adopted in the past to reduce malaria morbidity and mortality in pregnancy. Earliest interventions include vector control with residual house spraying and sanitary inspection. This intervention was effective, but found to consume about one sixth insecticide quite than bed nets (Curtis, 1998). Furthermore, benefits have been confounded by an increasing cost and non adoption of intersectoral approach (UNICEF, 2001).

Also, environmental control efforts have been adopted in the control of malaria in pregnancy. Mothers were known to be involved in gutter and bush clearing as an effective method of avoiding malaria during pregnancy (Lawale and Olaleke, 1998). To a large extent, successful implementation of widespread of environmental efforts requiring committed community participation and mobilization is needed to bring about desirable impact.

Chemoprophylaxis using anti-malarial drugs was another key intervention. Hitherto earliest of this intervention was an integral component of anti-natal clinic. Pregnant women were given weekly or daily prophylaxis using chloroquine (Falade, Ayisi, Kuile, Otieno, Misore, Odondi, Rosen, Kager, Steketee, and Nahlen, 2001), proguanil or daily Daraprim otherwise known as *Sunday Sunday medicine*. This intervention was noted to be effective and efficacious in the reduction of placental parasitemia and fever in the mothers especially in women of low parity (Garner, 1998). In Nigeria, pregnant women use a wide range of anti-malarial drugs for chemoprophylaxis. What each group of women uses is determined by their background. Research has show that rural pregnant women use less of anti-malarial drugs compared to their urban counter parts (NHDS, 2003). This is because selection of drugs to use depends on the users' knowledge and practical skills (Olaleke 2001). The range of anti-malarial drugs used for chemoprophylaxis before 2001 include: Daraprim, Metaprim, Chloroquine, Sulfadoxine-Pyrimethamine, antipyretics, Halfan, Amodiaquine and Herbs. However, with widespread of drug resistance, the choice of anti-malarial drugs for chemoprophylaxis has become increasingly challenging (Falade et al. 1998). In 2002 drug efficacy trial on chloroquine showed unacceptable efficacy level of national average of 30.2% (FMOH, 2003). This finding is consistent with other experience that has shown that chloroquine doses were inappropriately used as well as non-compliance to the drug regime in terms of

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treatment completion (Yusuf, Oladepo, Odunbaku, Afolabi and Osowole, 2015). Therefore, control of malaria in pregnancy has been problematic.

In the year 1998, the World Health Organization adopted Intermittent Presumptive Treatment using sulfadoxine pyrimethamine and insecticide treated bed nets as a key intervention for control of malaria in pregnancy. The strategy recommends that pregnant women during routine ante-natal clinic should be given intermittent preventive treatment in the malaria endemic countries using sulfadoxine-pyrimethamine and also getting the pregnant women sleep under insecticide treated bed nets. Field trials have shown that two doses of sulphadoxine-pyrimethamine given to pregnant women starting from the second trimester, i.e. the sixteenth week of pregnancy (when the baby has quickened in the womb) and second dose in the third trimester was effective in the reduction of placental malaria in area of high malaria transmissions (Schultz, 1994).

Furthermore, a randomized control trial on Insecticide Treated bed nets (ITNs) has shown to be effective in the reduction of malaria incidence and childhood deaths. However, widespread adoption of the recommended chemoprophylaxis and ITNs use will depend on how much funds is made available, by the endemic and donor countries technical and operational support (Lengeler, 1998).

2.4. Roll Back Malaria in Nigeria

The goal of Roll Back Malaria in Nigeria is to 'halve malaria mortality and morbidity by 2010'. The initiative endorsed in Nigeria by African Heads of States and Governments in the year 2000 adopted six key strategies to accomplish the set objectives. These include

1. Early detection.
2. Prompt and effective treatment within 24 hours of disease on-set.
3. Multiple preventions.
4. Well coordinated action.
5. Focused research, and
6. Dynamic global movement involving a partnership with governments, private sector, research organizations, civil society, media and development partners.

The targets of RBM initiative include early detection, prompt and effective treatment within 24 hours of disease on-set and to get 60% of pregnant women to

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receive an observed treatment dose of S-P at the selected ANC visit occurring at the second trimester of pregnancy, and a second treatment dose of S-P in their third trimester. Furthermore, to get 60% of the pregnant women sleep under insecticide treated bed nets.

2.3. Nigeria National Antimalarial Treatment Policy on Malaria in Pregnancy

In 2001, Federal Ministry of Health, Abuja formally adopted Intermittent Preventive Treatment of malaria in pregnancy using sulfadoxine-pyrimethamine and insecticide treated bed- nets (NDHS, 2003) in response to Roll Back Malaria initiative endorsed along with other heads of states and governments in a historic summit held in Abuja, the capital city of Nigeria April, 2000. The key strategy of the policy aimed at preventing malaria in pregnancy is to administer two treatment doses of S-P at an interval of at least four weeks to pregnant women during two out of the four WHO recommended fourth ANC visits starting from the 16th week (second trimesters) of the pregnancy. The last treatment dose is to be given at least one later than one month before the expected date of delivery (FMOH, 2005). Furthermore, the drugs will be taken in the presence of the health worker. The pregnant women should also consistently sleep under insecticide treated bed nets.

Key government activities towards the implementation of this policy since adoption include; the pilot testing of the WHO Monitoring and Evaluation tool for IPT of malaria in pregnancy in Oyo State. The result of the pilot test shows positive effects and operational feasibility. Other activities include; consensus building among stakeholders led by the Reproductive Health (RH) Division of the Federal Ministry of Health on the need for IPT use, development of Intermittent Preventive Treatment implementation guidelines, and training manuals. Government has also developed strategic framework and implementation plan as well as capacity building i.e. training of trainers (Master trainers) across the country (FMOH, 2004).

Most importantly, government has updated the national policy on malaria which saw a major shift from Chloroquine to Artemisinin based combination therapy for malaria cure and to use sulfadoxine-pyrimethamine at pre-defined intervals after the first foetal movement, for the prevention of malaria in pregnancy, as well as insecticide treated bed nets (ITNs) to maximize non-malaria control (FMOH, 2005). Further, for the treatment of uncomplicated malaria in pregnancy artemisinin based

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combinations has been considered safe and recommended for use in the second and third trimesters (FMOH, 2005).

However, assessment of the status of Nigeria vis-a-vis the Abuja targets shows that prompt access to appropriate treatment within 24 hours of disease on-set is 30%, the use of treated bed nets in household is 2% while only 12% of pregnant women used intermittent preventive treatment with sulfadoxine-pyrimethamine (NDHS, 2003).

Government major activities on Insecticide Treated Bed nets (ITNs) were: assessment of insecticide efficacy and effectiveness of ITNs use (FMOH, 2004), social marketing of ITNs through private sector, launching of ITNs Massive Promotion and Awareness Campaign (IMPAC) which involves issuance of ITNs through the public health facilities as a reward for ante-natal attendance by pregnant women and completion of immunization schedules by under-five children and distribution of over one million insecticide treated bed nets over the years (FMOH, 2004). In another dimension, government has reviewed Behaviour Change Communication (BCC) on malaria as a means to provide effective health education and promotion, which involves monitoring and evaluation, capacity building and resource mobilization.

2.6. Factors Influencing Acceptability and use of IPT

Many factors seem to affect the acceptability and use of IPT. Some of these factors relate to pregnant women's knowledge, perception, attitudes, beliefs and socio-demographic considerations.

a) Knowledge of malaria

Knowledge is a behavioural antecedent (Green and Kreuter, 1991). Studies have shown that poor knowledge of malaria transmission and prevention in the study areas with mothers' belief is deeply rooted in the custom and tradition of the Yoruba people (Fawole et al, 2001). A study has shown that the study participants mentioned prolonged exposure to sun and heat as the cause of malaria (Awoluyi, 2003). Knowledge of causes, transmission, dangers and prevention methods i.e. benefits of chemoprophylaxis and ITNs use) will lead to the adoption of recommended health technology (Ahorlu, Sharp, Ablorde, Dunyo, Gamedo, Kleinschmidt, Goodman, 2000).

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b) Pregnant women's Attitude, Belief and Perception

Malaria in Pregnancy is perceived as health risk for both mothers and their fetus (Laevens, 2002). In a study in Blantyre-Malawi, 97% of pregnant women perceived the dangers of malaria in pregnancy while 60% knew the dangers to the fetus and only 45% could state the dangers to the mothers (Laevens 2002). Furthermore, in a Malawi demographic health survey, 1996 knowledge of precise adverse outcomes of malaria in pregnancy was poor. Similar findings have been cited also in Kenya, where women perceived that malaria is bad to the pregnant mother and her fetus but knowledge of adverse outcomes was poor (Laevens 2002). What individuals do when they have fever or other symptoms suggestive of malaria will largely determine the eventual outcome. Studies conducted in Kisumu and Mombasa districts in Kenya have shown that 71% of the women believed that swallowing antimalarial drugs during pregnancy is harmful (Laevens, 2002). In districts of Busia and Kilifi Kenya, S-P the first choice of choice for IPT was poorly accepted. In a study to identify the pattern of drug use among pregnant women, the study reported irrational drug use among the women (Oladele, 2004).

In another study in Benin Nigeria, it was reported that 81% of drugs used by pregnant women was run by chemist prescription (Odunsi and Igbafe, 2004). Pregnant women take measures to protect their fetus due to high premium placed on pregnancy outcome. The drugs taken are those readily available (Hunters and Howe, 1990) which includes local herbs and kolanuts (Okunkwo, 2003). Another measure taken by mothers to protect their fetus includes in take of local diet (Oladele, 2004). Also, what pregnant women and communities do to protect themselves against mosquito bites and reduce mosquito breeding sites will influence the risk of infection (Ongoke, 2003). Fawole et al 2001, reported that mothers were known to clear gutters and bushes around homes, staying in a screened environment i.e. use of window/door nets as measures to reduce mosquito breeding sites and bites. Use of current prevention method i.e. ITN is not yet widely practiced. the 2003 national health survey finds pregnant women who ever used ITN in 2% (NDHS, 2003). A study in South Africa has shown that perceived benefit of ITNs use led to a consistent sleeping under the nets by the study population (Khoza et al, 2000).

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c) User Fee Exemption for IPT and Willingness to Pay

Research evidence has shown that very few people use bednets and wide coverage could only be achieved through subsidies and fee exemption. It has been recommended in a study in Kenya that IPT/SP be given free of charge to pregnant women visiting government owned hospital. This study noted that Ante Natal Clinics in Kilifi and Busia charged user fees and this led to the reduction of IPT uptake coverage as number of pregnant women who took 2nd dose of S-P dropped from those that presented for the first dose (IPT1) due to their inability to pay for the 2nd dose. Similar experience was cited in another study in Malawi, where government facilities provided free S-P while Christian Hospital Associations charged user fees which led to low uptake of 2nd dose of S-P (Laevens, 2002). Cost recovery for drugs has been a significant feature of African nations' national health delivery system. It was also an integral feature of the Bamako Initiative on funding or financing primary health care (Adeniyi et al, 1997). Economic decline has led to cuts in social and health spending by the government and further increased the levels of user-fee charges.

In Nigeria, the Oyo State government has a free health care policy but free health care services are available only in the primary health care settings funded by the Local Governments while at the secondary level the State government subsidizes some of the drugs in the essential drug formulary list. Sulphadoxine-pyrimethamine the drug of choice to the intermittent preventive treatment of malaria is one of the drugs in the government list for subsidy.

It has been documented that user-fees can cause a decline in hospital attendance (Waddington, Enyimayew 1989). In a study in Kabarole District, Uganda the overall utilization of general outpatient services dropped by 21.3% after the introduction of user-fees (Kipp et al 2001). Overall outpatient attendance for Ghana showed general increase between 1989 and the year 2000 when user-fees was introduced. However, there exist potential patients who could not be reached (Adams, 2003). In another study in Nigeria, willingness to pay for ITN retreatment has been established (Onwujekwe, Shu, Chima, Onyido, Okonkwo, 2000). Also, user fees have been established as a much burden to the poor. In another study in Kenya, the people were willing to pay for a bed net but can afford neither the full nor the subsidized price (Guyatt, Ochola and Snow, 2002).

In another study in Nigeria, more than 90% of the respondents were willing to pay for Combination Therapy (CT) for effective management of an episode of malaria

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However, the study concluded that combination therapy based on user-fees might not be worthwhile and equitable. This was attributed to economic and equity constraints on CT wide-scale use, more also benefit/cost ratios depend on the type of questions that were used to elicit willingness to -pay (Onwujekwe, Uzochukwu, Shu, Ibeh, Okonkwo 2001). Economic constraints is a crucial issue in the introduction of user-fees on health technologies, as most governments in Africa embark on poverty alleviation. It has been shown that those in lower economic status quintiles were less likely to purchase untreated nets as well as have lower hypothetical and actual willingness-to-pay for Insecticide Treated Bed nets (Onwujekwe, Hanson, Fox-Rushby, 2003).

Therefore, distribution of sulphadoxine-pyrimethamine and insecticide treated bed nets (in the implementation of Intermittent Preventive Treatment) faces the challenge of diversity in willingness-to-pay. The World Health Organization (WHO) promotes malaria control as a measure to reduce poverty and aims at 30-fold increase in the distribution of ITNs in the next five years. It is still not clear on how this will be financed (Guyatt et al 2002). In a study in highland Kenya, the aspiration for the people to protect members of their households with ITN was found not to be compatible with their ability to pay (Guyatt et al. 2002). The study concluded that an option of free distribution of ITNs remains equitable for effective ITN coverage and also break the cycle between poverty and malaria.

Also peoples' perception of the affordability of health technology and its link to their willingness to pay needs further exploration (Onwujekwe, Shu, Nwagbo, Okonkwo, 2001). However, user fee has good prospects for financing the quality improvements in terms of facility maintenance, supervision of personnel and availability of drugs to treat malaria etc. (Weaver, Ndumobissi, Kornfield, Ilesanmi, Sathe, Cleghorn, Kendjo, Nguenhi, Senwara-Dafiaoma, 1996)).

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2.7. Conceptual Framework

The conceptual framework used in this study is the Health Belief Model (HBM) to facilitate the perception and preventive health behaviour of pregnant women.

Health Belief Model

The proponents of the health belief model originally associated the framework with health preventive behaviour of an individual (Rosenstock, 1974, 1977). The model was based on the predictions that the individual's readiness to comply with a recommended behaviour depend on his perceived susceptibility and perceived seriousness of the health condition or illness. Health Belief Model predicts that people will only take preventive action if a number of conditions were met. These conditions include perceived susceptibility to that particular health problem. Perceived seriousness of the health problem and conviction that recommended treatment or preventive activities will be beneficial and at the same time pose no overwhelming costs. Other components of the model include modifying factors and cues to action. The modifying factors include demographic characteristics of the individual, while cues to action comprise of the stimuli, which increase threat perception and therefore, promote action. The model is seen to be a reliable predictor of compliance. The Health Belief Model in the adoption of IPT by pregnant women is shown in figures 1 and 2.

In this application, the model is used to determine whether, pregnant women perceive themselves to be vulnerable to malaria. Also, it is used to assess whether they consider malaria as a threat to their health and fetus. Pregnant women will be more likely to adopt Intermittent Preventive Treatment of malaria in pregnancy using sulphadoxine-pyrimethamine during routine ante-natal clinic and always sleep under insecticide treated bed nets if they believe that the advantages of not suffering malaria illness outweighs the disadvantages and constraints. The level of this perceived threat on the part of the pregnant women, the motivating and enabling (or conversely the discouraging and constraining) factors will determine the individual's compliance to the behaviour, in which case, belief and knowledge of the pregnant women about the cause, and prevention is a modifying factor, while perception of susceptibility to malaria risk and perceived seriousness of its consequences would determine the threat they perceived. Perception of malaria risk will increase the willingness to pay for its prevention (Onwujekwe et al, 2000). If pregnant women in the community perceived

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that they are susceptible to malaria, and that the disease is a serious one, then their perceived threat would be high. Consequently, they would likely accept ITN to prevent malaria.

Example, a study in Malawi identified perceived malaria risk, mosquito nuisance and household income as the major determinants of ITNs use (Hlope, 2007). This presents three possibilities.

Assumptions:

1) There may be some pregnant women who presumably see connection between malaria and mosquitoes and therefore, their perceived threat (risk) from malaria is translated into willingness to buy and use nets.
2) Other pregnant women may or may not have knowledge, but they perceive mosquitoes themselves as nuisance and threatened by "nuisance", not malaria.
3) Finally, income as a modifying factor may influence perceived benefits such that pregnant women with less income feel a constraint, when it comes to considering purchase, while those with more income do not. Also, expenditures on curative care could deplete households' income, making them unwilling to pay for preventive intervention in the short term (Onwujekwe et al. 2004).

Some intervening variables or modifying factors influence the chance that the individual will be motivated to take the recommended action. These variables influence compliance with a recommended action through the other variables of perceived threat and perceived benefits. These factors include demographic variables such as age, parity, income, educational status, as well as knowledge of the cause of malaria, malaria threat and benefits of the technology (ITN). Example knowledge about the dangers of malaria in pregnancy, and consequences of not protecting oneself against mosquitoes and malaria, prior experience of the consequences, and other consideration of malaria complications will invariably influence an individual's perception of threat and consequently, the readiness to use ITN to prevent malaria (Brieger et al. 1996; Okafor et al. 2002).

'Cues to action' is another important element of the model. It consists of the stimuli, which increase threat perception and therefore, promote action. This could be communication from health providers, and Mass media. It also includes previous pregnancy experiences, current experiences of symptoms of malaria, and opinion of significant others i.e. mothers/mother-in-laws, husbands, sisters/friends. These could

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encourage or discourage compliance. It has been noted that readiness to comply to IPT use depends also on individual's belief that compliance to a particular behaviour will reduce threats, will not cost more, and will lead to good health. This therefore means that high cost of S-P and ITN, perceive malaria risk, and conception of health hazards are likely barriers. In wi h case, in communities with options of high cost (or no money), then compliance or likelihood of taking recommended action will be low. Therefore, these assumptions are crucial in the formulation of guide in investigating pregnant women's knowledge about causes, preventions, perceptions, and consequences of malaria in pregnancy, perceived benefits of chemoprophylaxis and the use of IPT, the perceived vulnerability and seriousness of malaria and the associated factors and the impact of the relevant ones.

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Figure 1

The Health Belief Model applied to the adoption of IPT using Sulphadoxine-Pyrimethamine

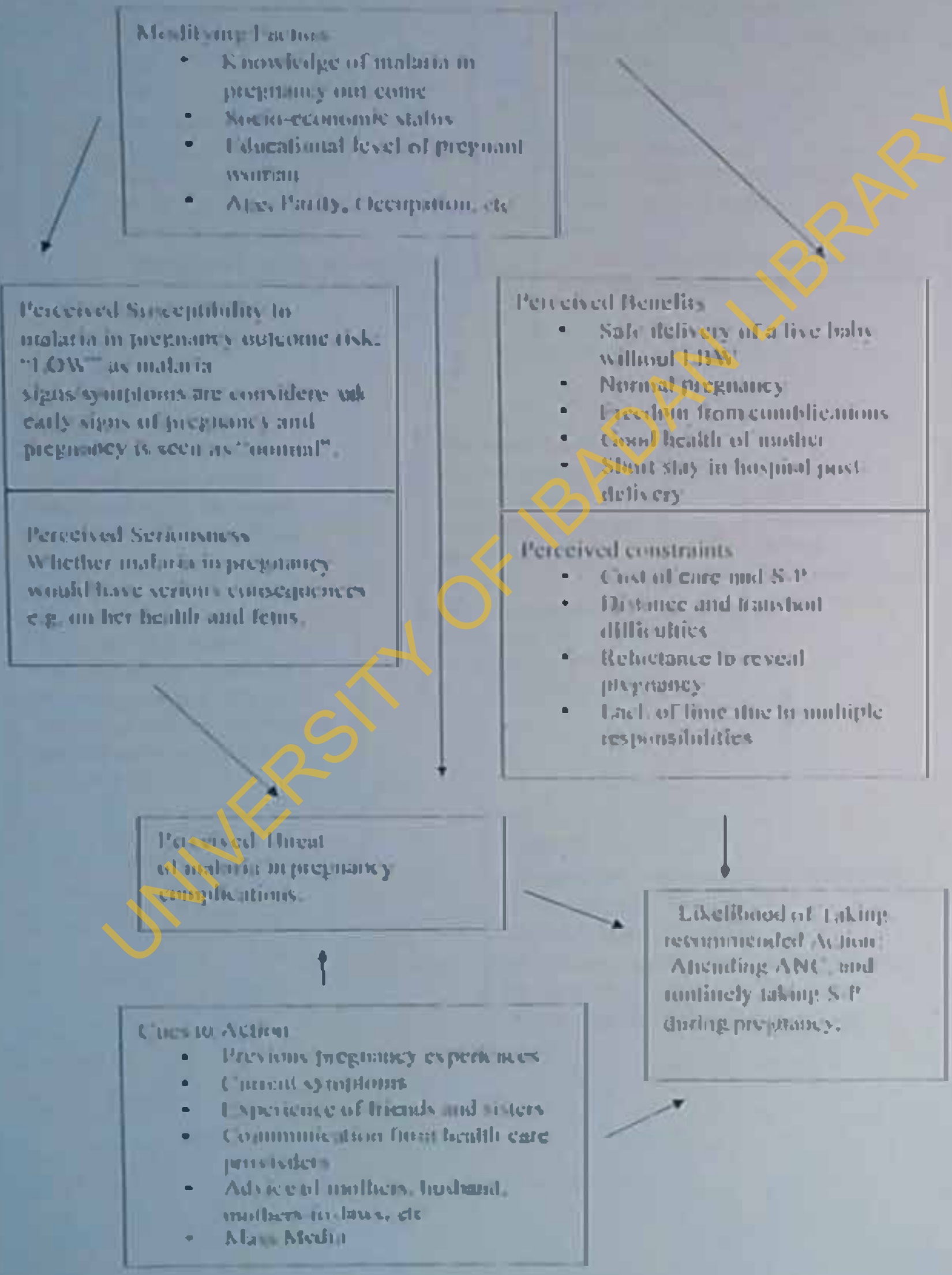

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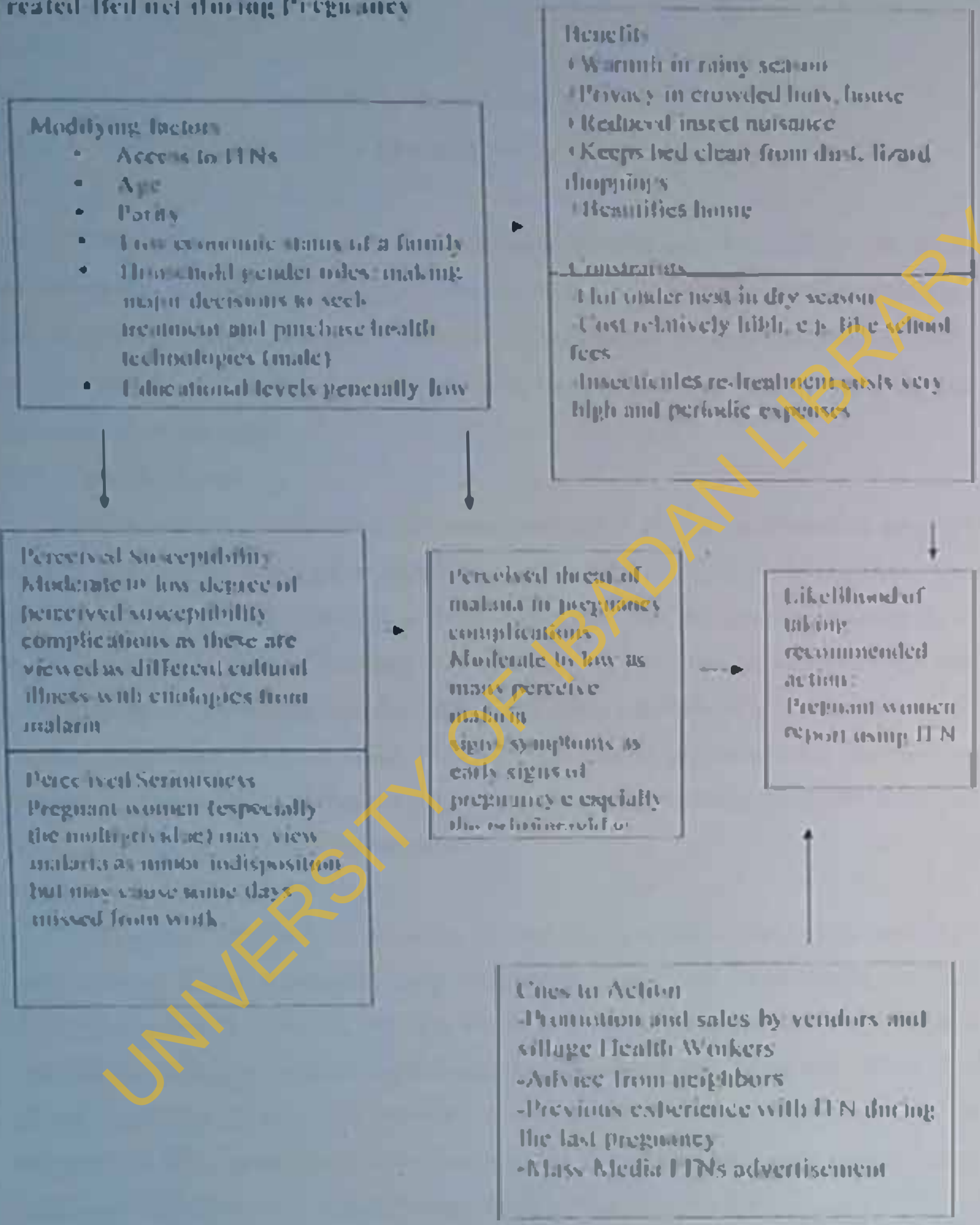
Figure 2: The Health Belief Model Applied to the Use of Insecticide Treated Bed net during Pregnancy



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CHAPTER THREE

3.1. METHODOLOGY

The study research process is described in this chapter. The outline consists of the following components: the study design, scope, study area, sampling procedure and sample size, sample variables; method and instrument for data collection; validity and reliability, data collection process; data management as well as analysis and presentation of the result.

3.2. Study Design

This study is comparative and cross sectional in design. It focused on pregnant women who had been treated in pregnancy using Sulphadoxine-pyrimethamine (SP) and Insecticide Treated Bed nets (ITNs). The study was designed to investigate in more details the factors influencing the willingness of pregnant women to access ante natal services in fee paying and free ante natal clinics in Akinyele, Ibadan North and Ibadan South-East of Oyo State to adopt the WHO recommended Intermittent Preventive Treatment of malaria in pregnancy using sulphadoxine-pyrimethamine and Insecticide Treated bed nets components.

3.3. Scope of Study

The study focused on pregnant women in their second and third trimesters who were receiving ante-natal clinic services in three Local Government Areas of Oyo State namely: Akinyele, Ibadan North and Ibadan South East. The pregnant women were selected among women using fee paying and free ante-natal clinics. One of the limitations of the study includes few numbers of fee paying health facilities from which study participants were drawn in the fee paying ante-natal clinics pool. Free health facilities were selected based on Oyo State health policy.

3.4 Study variable

The major independent study variables of interest in this study include basic socio-economic characteristics of the respondents; age, religion, educational levels, occupation, marital status, parity, age of pregnancy, and income. The intermediate variables are malaria knowledge of the respondents, perceptions, perceived benefits of chemoprophylaxis using sulphadoxine-pyrimethamine and insecticide treated bednets

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while dependent variable included malaria preventive methods, willingness of the respondents to adopt IPT as well as willingness to pay for sulphadoxine-pyremethamine and insecticide treated bed nets. Some of these variables were derived from the literature and theoretical framework.

3.5 The Study Area

The study took place in three selected Local Government Areas in Ibadan. Ibadan is the largest city in Oyo State and also the state capital. The city was founded in the early part of nineteenth century by fleeing Yoruba refugees from the old Oyo Empire during the Fulani invasion. Administratively, Ibadan is divided into eleven Local Government Areas. About five of the local government areas are within the city i.e. Ibadan North, Ibadan North-West, Ibadan North-East, Ibadan South-East and Ibadan North-West (see map). There are six other Local Government Areas located around the city and at the peripherals including Akinyele Local Government Area. The original inhabitants of the land were traders, artisans, blacksmiths, and farmers.

The city commands a strong political influence and this led to economic and agricultural growth which provided incentives for other immigrants to the land. These include the Igbos, Hausas and the Edo people. This led to rapid social change and population growth which however weakened the social ties of the extended family as the number increased with population of 1.84 million (NPC, 1991). The city is characterized with congestion, over-crowdedness, shortage of water supply, waste disposal and housing difficulties. The pattern of residence is visibly divided into inner core, peripheral and transitory areas.

Study Sites

The selected Local Government Areas where those with ante natal clinics, where the cohorts of women who had participated in Intermittent Preventive Treatment of Malaria in Pregnancy exist. These include Akinyele, Ibadan North and Ibadan South-East Local Government Areas.

Akinyele Local Government Area

Akinyele Local Government Area is one of the 33 LGAs located in Oyo State. It lies towards the northern peripherals of Ibadan metropolis and occupies about 5,414.775 hectares of land with headquarters at Moniya. It is a peri-urban community with population of 140,118 people (NPC, 1991) comprising communities such as Ojoo, Sasa, Moniya, Oreta, Odogbo, Idi-ose, Ilaye, Igbo-oloyin, Kole, etc.

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Akinyele Local Government Area is inhabited predominantly by the yorubas and also home to mixed ethnic tribes which include mostly the Igbos, Hausas and other groups. The occupation of the inhabitants include, trading, farming, artisans and civil servants who work at the University of Ibadan and State Civil Service and other institutions including International Institute of Tropical Agriculture (IITA), etc. Also, there is military cantonment located within the local government area. It has a popular market, and about thirty health facilities, one general hospital and about twenty one private hospitals. One Medical Officer of Health oversees the activities of the government owned health facilities and assisted by seven CHOS, 19 Nurse Midwives, 49 CHEWS and 15 EHOS (NPHCDA, 200?).

Ante natal care services are available in four primary health care center, and the general hospital. Four primary health care centers were selected for the project based on the client load and inclusion criteria (see table 2). One of the health facilities was a privately built health clinic (Adeghite Foundation) while others were government owned health facilities which include (Ojoo, Sasa, and Moniya Primary Health Care Centers). Akinyele local government area is considered as high malaria transmission density (MoH, 2002).

The following anti-malarial drugs are available for chemoprophylaxis: Fansidar, Malartech and Amalar. The Local Government current efforts in malaria control include: procurement of anti-malarial drugs for the IPT projects training and involvement of Traditional Birth Attendants (TBAs) in the Roll Back Malaria initiative. The LGA health workers have been trained on ITNs use and Local Government has also in the past benefited from UNICEF funded projects which include health, education and agriculture.

Ibadan South-East Local Government Area

Ibadan South East Local Government Area is one of the five local government areas located inside the city of Ibadan. The Local Government was created in August 27, 1991 as one of the Federal Government Reform Agenda in bringing governance down to the grassroot. Headquarter of the local government is located at Mapo Hill, Ibadan which situates in the heart of Ibadan city. It is one of the old town's inner core areas of Ibadan where most of the indigenous population of 225,800 (NPC 1991) live comprising of several communities which include Oja'ba, Oranyan, Elekuro, Oulu-Apetin, Molete, Challenge Orita, Elela, Felele etc. The Local Government Area covered about 1,189.5 hectares (16sqkms) of land, with 79% occupied by residents

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while 5% was for public use such as schools, hospital etc and the remaining portion for agricultural purpose (Awoleyi, 2003). The tributaries of Ogunpa river flows through the local government, with other rivers and streams which includes Oluyan, Kuteh, Elere and Laho. The occupations of the inhabitants include trading, black Smiths, craft, artisans and farmers.

There are about six primary health care facilities located in the local government area, and few private hospitals. There is no government owned secondary or tertiary hospital in the local government area but, there exists one secondary mission hospital owned and managed by the Catholic Church.

There are also numerous traditional healers, spiritualists and religious leaders (Fawole et al, 2001) who are involved in birth delivery. Also, like Akinyele Local Government Area, there is one primary health care coordinator who oversees the activities of the PHC's. Three primary health care facilities (government owned) and a mission hospital (owned and managed by the Catholic Church) were selected for the project though one of the PHC's (Molete PHC) dropped out of the project on the account of low client load. Ante natal care services are available in the three primary health care centers, Agbongbon, Oluyan, Molete primary health care centers and St. Mary Catholic Hospital Eleta. The anti-malarial drugs available for chemoprophylaxis include Malareech and Amadur.

Also, the LGA Health department in joint collaboration with Roll Back Malaria unit of the State Ministry of Health and World Health Organization had in the year 2000 conducted a training workshop for the community members on the use of ITNs (Awoleyi, 2003) an effort seen as a measure to reduce the malaria-related morbidity and mortality of malaria in pregnancy but ITNs are not available in the LGA.

Ibadan North Local Government Area

This local government is also located within the city of Ibadan. It is one of the largest local government areas in the state and considered to be an urban community. It has a population of 302,271 people (NPC, 1991) with headquarters at Agodi. The LGA consists of ten political wards which include Agodi, Oritamefa, Yemetu, Agbowo, Sango, Mokola, Bashorun, Idi-ape etc. The local government area is a home to mixed ethnic tribes, yorubas, Igbos and Hausas. The inhabitants include traders, artisans, civil and public servants especially those working at the Federal Secretariat.

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Nigerian Television Authority, State Hospital Ado-ekiti, and the College of Medicine and Teaching Hospital located in the local government area.

The LGA consists of four health districts. There are four primary health care facilities, one state hospital, a teaching hospital and a large number of private hospitals located in the area. The health facilities selected for the project included four primary health care centers (Ibi-Ogbagun, Sango, Agbowo and Samondat, and one state hospital (Ado-ekiti) all managed by the government (see table 2). The LGA has one medical doctor (PHC Coordinator), thirty environmental health officers (EHOs) (Olowonle, 2003), twenty four community health extension officers (CHEWS), Sixteen Nurses/Midwives and five community health officers (Moh, 2002). Ante natal care services are available in seven of the primary health care centers, University College Hospital, State Hospital Adeoyo and several private hospitals which include the Group Medical Practitioners, etc.

Wide range of anti-malarial drugs for chemoprophylaxis exist which includes, lumefan, maloreen, amalar, malexin, falcimune and paludrine the Local Government efforts in malaria control must be participative in the IPT project. include an arrangement with an NGO for wide spread of LLN marketing within the LGA, training of health workers in LLN use and procurement of anti-malarial drugs

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Table 1

Population by Local Government Areas

Local Government Area	Male	Female	Total
Akinyele	40433	42359	82792
Ibadan North	152061	150211	302271
Ibadan South-East	111936	114824	225800

(Source: National Population Commission, 1991 population census of Nigeria)

Table 2

Health facilities total ANC first attendance by Local Government Areas

	Health Facilities	Total no. of New ANC first attendance within 12 months
	Akinyele LGA	
1	Moniya Primary Health care center	207
2	Sasa Primary Health Care center	120
3	Adeyeleki Foundation	135
4	Ojoo Primary Health Care center	285
	Sub-total	747
	Ibadan North LGA	
5	Idi-Ogunpan Primary Health care Center	1266
6	Agbowo Primary Health Care center	235
7	Sango Ajuwon Primary Health care center	285
8	Sonunda Primary Health care center	300
9	Adeoyo State Hospital	8,746
	Sub-total	10,837
	Ibadan South-East LGA	
10	Ojoo-oo Primary Health care center	861
11	Agbongbon Primary Health care center	216
12	St. Mary Catholic Hostital	1,225
	Sub-total	1,302
	Grand total	14,686

(Source: Monitoring Evaluation of MIP/IPT indicators, WHO Geneva 2001).

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3.6 Sample Size And Sampling Procedure

Sample size of 411 was calculated. Participants were women who had been treated with the intermittent preventive treatment of malaria in pregnancy. The total first attendance at the ante natal clinic was used as the base population (14,686). These consisted of pregnant women who made their first ANC contact, of whom an estimated 50% were ANC users. Maximum deviation of 1.15% was allowed at 95% confidence that the sample rate does not deviate from the true population by more than this. 10% of the sample size was added to account for attrition.

The method used for the recruitment of the study respondents was stratified sampling technique. The researcher approached the health facilities and obtained an up to date lists and contact details of the pregnant women who registered for ante natal clinic and used this to stratify the health facilities into two strata: fee paying and free ante natal clinics (see table 3). Furthermore, equal number of respondents was selected proportionately from each stratum to ensure equal representation based on the following inclusion criteria:

1. Pregnant women who had been treated with the intermittent preventive treatment of malaria in pregnancy in the 13 health facilities in the three selected Local Government Areas i.e. Akinyele, Ibadan South East and Ibadan North of Oyo States, Nigeria (see table 3).
2. The group of women who had their babies delivered at the health facilities where they obtained the IPT products; to help confirm the identity of the respondents and dosage of IPT received.
3. All such women who met with criteria (1) and (2) above and whose vital hospital records especially the variables under investigation by this study (age of pregnant woman, age of pregnancy, parity, and birth weight of baby) are clearly specified in the hospital records. This was done to help in eliminating the problem of recall.
4. All such women who met criteria 1-3 above and have traceable residential/office address as may be obtained from the hospital record to identify and locate them.

Those women who met the inclusion criteria were conveniently selected from the health facilities. Convenient selection was adopted due to the problems necessitated by the poor status of the hospital records. Therefore, two hundred and six (206) women were conveniently and proportionately recruited from the fee paying health

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facilities (namely: St. Mary Catholic hospital, Eleta in Ibadan South East Local Government and Adepheti Foundation in Akinyele Local Government). Another 205 were recruited from the free health care facilities (namely: Adeoyo State Hospital, Idi ogungun, Agbowo, Sango and Samonda Primary health care centers in Ibadan North Local Government Areas, and in Akinyele Local Government Area Moniya, Sasa and Ojoo Primary health care centers as well as Olanyan, Agbongbon in Ibadan South East Local Government Area).

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Table 3

Proportionate Selection of the study Respondents

	Health Facilities	Total no. of New ANC first attendance within 12 months	Fee Paying Ante Natal Clinics	Free Ante Natal Clinics
	Akinyele LGA			
1	Moniya Primary Health care center	217		3
2	Sasa Primary HealthCare center	120		2
3	Alegbeti Foundation	135	12	
4	Ojoo Primary HealthCare center	285		5
	Sub-total	747		
	Ibadan North LGA			
5	Iwo-Ogungun Primary Health care Center	1766		20
6	Apkowa Primary Health Care center	235		4
7	Sango polaku Primary Health care center	385		6
8	Samonla Primary Health care center	115		7
9	Adeoyo State Hospital	7,830		131
	Sub-total	10,647		
	Ibadan South-East LGA			
10	Oranyan Primary Health care center	861		11
11	Agbaakin Primary Health care center	216		1
12	St. Mary Catholic Hospital	2,225	191	
	Sub-total	3,302		
	Grand total	14,686	206	205

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3.7. Instrument for data collection

Data collection was by the use of a set of semi-structured questionnaire survey. The set of questionnaire comprised of seven sections (see appendix 2) consisting of an introductory section, which explains the purpose of the study and to solicit cooperation. This is followed by the second section containing socio-demographic characteristics questions. The third section seeks information on knowledge and perception of malaria while the fourth denotes questions on vulnerability and seriousness of malaria in pregnancy. The fifth section seeks information on cost and willingness to pay for IPT. The last two sections deal with opinions and influence of significant others, knowledge and retention of bednets after the initial six months period.

3.8. Validity

The construct validity of the instrument for data collection was ensured by relying on the wording and phrases obtained during the pilot of the instrument among sub-sample of an existing cohort of women from the facilities who met the inclusion criteria. Content validity of the items in the questionnaire was addressed by ensuring that they were all understood in the local cultural context during the pre test session. This was done during the training sessions with research assistants, supervisor and the researcher. Example, each question item in the questionnaire was interpreted into the cultural context, and understood so as to aid research assistants have uniform interpretation of question items in the field. The questionnaire was also reviewed by senior colleagues and the researcher's supervisor and was undertaken to provide face validity.

3.9. Reliability

Reliability was ensured by pre-testing the questionnaire among the set of women that bear similar characteristics with the target population. Forty copies of the questionnaire were pre-tested among sub-sample of the study population. The pre-test respondents were chosen by random sampling using a table of random numbers and drawn from the three Local Government Areas namely Akinfeye, Ibadan North and Ibadan South East. Furthermore, the pre-test respondents were blocked and removed from the main study. Data collected during the pre-test were analyzed to ensure that information obtained corresponds to what the study intends to collect. The result was used to adjust the question items in the questionnaire especially the difficult ones.

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respondent and the time required for completing an interview before the final production of the questionnaire.

Example 'Student' was added to the options in question number 10 which seek to find out the occupations of the respondents. This was so, because it was found out during the pre-test that some of the respondents were still in school. The same also applied to question number 12, as some of the respondents' husbands were also found to be in school. In question number 19a, the word 'consequences' was found to be ambiguous, the word 'dangers' was used to define consequences to facilitate understanding. The brands of sulphadoxine-pyremethamine used by the respondents during the pilot study were found out during the pre-test to include fansidar, malaneem and amalar.

These brand names were used to substitute for the word sulphadoxine pyremethamine' in questions numbers 23a, 30a, 31, 34a, 34b, 36b, 36c, and 17 as sulphadoxine-pyremethamine was found to be ambiguous. Question number 17a was also modified. It was found out that the question needed to be answered by those who bought S-P and those who did not, so as to provide clue if those who did not buy S-P will be willing to pay for S-P if their subsequent pregnancy should price be put in S-P. Subsequently, question number 36b options were modified to read "If no go to question number 12a". The pre-test provided an opportunity for the researcher to address logistics, procedural challenges and to modify the instrument for more clarity, understanding, acceptability and respondent friendly.

3.10. Data collection process

One day training was conducted for the research assistants who helped with data collection under the supervision of the study supervisor. The research assistants participated in the pre-test exercise. They included nurses and field workers in health research. Also, the researcher recruited Community Health Extension Workers (CHEW) and Village Health Volunteered Workers (VHVW) to help identify respondents' residential and office addresses in some difficult areas. The research assistants were trained on the basic techniques for questionnaire administration and use of local language in interpretation of key questionnaire words to ensure consistency. Role play, demonstrations and return demonstrations were used to reduce inter-variations. The researcher supervised data collection and screened returned completed questionnaire in the field at the end of each day to ensure completeness and consistency.

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Eight Research Assistants administered the questionnaires on the respondents at their homes or office addresses obtained from the hospital records. The record obtained from the health facilities include names, age, pregnancy age when the first IPT was taken, birth weight and sex of the baby, parity of the mother and residential or office addresses. These helped to identify and confirm the true identity of the respondents. All the respondents were women who delivered their babies in the health facilities where they obtained IPT.

The Research Assistants were all female except one male and all had post Secondary education. Also, all the Research Assistants were residents of Ibadan. Preparation for interview started at 8.30am and the interview ended at 5.30pm each day. The interview was originally scheduled to last for ten days but ended up lasting for two and half months. The major reason was the failure to meet the respondents at home or at the address obtained from the hospital records. In some occasions, it required about three to four contacts to meet and interview a respondent. Questionnaires were submitted to the researcher on arrival from the field each day. Screening and editing of the questionnaires were done immediately before the departure of the interviewers. Questionnaires with errors were returned to the interviewer concerned for correction.

3.11. Ethical consideration

Ethical approval was sought for and obtained from the Local Government Authorities through the Medical Officers of Health for each of the Local Government Areas to gain access to the health facilities and the hospital records. Also the study instrument contained an informed consent clause to respect the voluntary participation of the respondents and protect their individual identity. The research assistant on the location and identification of the respondent will confirm the true identity of the respondent using the vital identities as obtained from the hospital records. Then, the interviewer explained the purpose of the research, assured the respondent of confidentiality of the information volunteered and her option to agree to participate or not. Also, the respondents were informed of their freedom to stop the interview at any stage if they were no longer comfortable with the interview. Then, the interviewer formally requested for the participation of the respondents and when consented, the appropriate column listed for the consent of the respondents was marked.

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3.12. Data analysis

The questionnaire were sorted and coded manually by the investigator. Three hundred and five (305) out of 311 recruited study participants were met either at home or offices and had their questionnaires correctly filled and accepted for analysis. Data was fed into the computer using SPSS 16.0. Data entry was done twice independently and cleaned. Frequency distribution, means, standard deviation and percentages were computed for all variables. Wealth quintile was calculated based on weighted frequency distribution of households' items owned by the respondents. Those who scored 25 or less were classified as low quintiles, while cut off points for medium and high quintiles were 50 and 75 respectively. Chi-square statistical tests were carried out in order to determine significant association between variables of interest.

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CHAPTER FOUR
RESULTS

The chapter deals with presentation of the findings of the study. These are presented in parts

Socio-Demographic Characteristics

The 305 respondents consist of 202 (66.2%) in fee paying ante natal clinics and 103 (33.8%) in free ante natal clinics. The respondents' overall group's mean age was 28.0 (SD±4.77) years. The mean age of the respondents in the fee paying ante natal clinics was 29.0 (SD±4.77) years compared to those in the free ante natal clinics, 28.0 (SD±4.91) years. Out of the 202 respondents in the fee paying ante natal clinics, most respondents 116(57.4%) were aged 18-29 years, followed by 67 (33.2%) mid age between 30 -35 years (see table 1a)

A total of 287 (94.1%) respondents were currently married consisting 187(92.6%) from the fee paying ante natal clinics group compared to 100 (97.1%) respondents from the free ante natal clinics. Overall, a total of 118(38.7%) respondents had their first pregnancies while those with two or more pregnancies (multigravidae) were 205 (67.2%). Out of this, those with first pregnancies in the fee paying ante natal clinics group were 79 (39.1%), second or more pregnancies (multigravidae) 123 (60.9%) compared to free ante natal clinics' first pregnancies which were 21 (20.4%) and second or more pregnancies 82 (79.6%). An overwhelming number of respondents were Yoruba, 275 (90.2%) consisting of 181 (89.6%) from the fee paying ante natal clinics compared to 91(88.3%) from the free ante natal clinic group. The respondents belong to only two religious groups nearly in equal number. Respondents in the fee paying ante natal group accounts for Christians 100 (49.5%), and Moslems 102 (50.5%) compared to free ante natal clinic group Christians 52 (50.5%), and Moslems 51(49.5%).

Majority, 178 (58.4%) of the respondents live in the inner core of Ibadan with fairly more from fee paying ante natal clinics 133 (65.8%) compared to 45

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(43.7%) from free ante natal clinics (see table 4b). The respondents' educational status showed that 242 (79.2%) had post primary education, out of which, 172 (85.1%) were from the fee paying ante natal clinics and 70(68.6%) from free ante natal clinics. About two-third of the respondents were unskilled 211 (69.0%) i.e. house wives without any trained skill or trade. The sub group consists of 130 (67.1%) from fee paying ante natal clinics and 67 (65.7%) free ante natal clinic. The wealth quintile of the respondents showed that 134 (43.93%) were in the high wealth quintile status consisting of 131 (51.4%) from the fee paying ante natal clinics compared to 21 (23.3%) from the free ante natal clinics. Other details of the respondents socio demographic characteristics are presented in table 4b.

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Table 4a

Socio-Demographic Distribution of the Respondents (Age, Marital Status, Parity, Ethnicity and Religion)

Table 4a: Socio Demographic Distribution of the Respondents

	EP-ANC	LANC	Total Frequency	Percentage
Age				
18 – 23	26 (12.9%)	21 (20.1%)	47	15.1
24 – 29	90 (44.5%)	42 (40.8%)	132	43.3
30 – 35	67 (33.2%)	34 (33.0%)	101	33.1
36 – 41	19 (9.1%)	6 (5.8%)	25	8.2
Total	202	103	305	100
Marital Status				
Currently Married	187 (92.6%)	100 (97.1%)	287	94.1
Formerly Married	8 (4.0%)	3 (2.9%)	11	3.6
Never Married	7 (3.5%)	0 (0.0%)	7	2.3
Total	202	103	305	100
Parity				
First Pregnancy	79 (39.1%)	21 (20.4%)	100	32.8
Second Pregnancy or more	123 (60.9%)	82 (79.6%)	205	67.2
Total	202	103	305	100
Ethnicity				
Yoruba	184 (91.1%)	91 (88.3%)	275	90.2
Igbo	5 (2.5%)	7 (6.8%)	12	3.9
Hausa	2 (1.0%)	1 (0.9%)	3	1.0
Others	11 (5.4%)	4 (3.9%)	15	4.9
Total	202	103	305	100
Religion				
Christians	100 (49.5%)	52 (50.5%)	152	49.8
Muslims	102 (50.5%)	51 (49.5%)	153	50.2
Total	202	103	305	100

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Table 4b

Socio-Demographic Distribution of the Respondents (Residence, Education, Occupation and Wealth Quintile

Residence	IP-ANC (%)		E-ANC		Total Frequency	Percentage
Inner core	133	(65.8%)	45	(43.7%)	178	58.1
Transitional	39	(19.3%)	46	(44.7%)	85	27.9
Peripheral	30	(14.9%)	12	(11.6%)	42	13.7
Total	202		103		305	100
Education						
Never attended school	6	(3.0%)	4	(3.9%)	10	[illegible]
Primary school incompleted	3	(1.5%)	2	(2.1%)	5	1.6
Primary school completed	21	(10.4%)	27	(26.2%)	48	15.7
Secondary school incompleted	11	(5.4%)	20	(19.4%)	31	10.2
Secondary completed	96	(47.5%)	33	(32.0%)	129	42.3
Higher institution	65	(32.2%)	17	(16.5%)	82	26.9
Total	202		103		305	100
Occupation						
Skilled	56	(27.7%)	33	(32.0%)	89	29.2
Unskilled	136	(67.3%)	67	(65.1%)	203	66.6
Student	10	(5.0%)	3	(2.9%)	13	[illegible]
Total	202		103		305	
Wealth quintile						
Low	42	(20.8%)	53	(51.5%)	95	31.2
Medium	50	(24.8%)	26	(25.2%)	76	24.9
High	110	(54.5%)	24	(23.3%)	134	43.9
Total	202		103		305	100

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Knowledge and Perception of Malaria

When respondents were asked to name the cause of malaria in pregnancy, overall 233(76.4%) of the respondents named mosquitoes as the cause of malaria. This comprised of 163(80.7%) respondents from fee paying ante-natal clinics and 70(67.9%) from free ante-natal clinics (see table 5). Furthermore, 12(13.8%) identified environmental-related causes such as exposure to rain and heat from the sun, drinking unclean water and eating polluted food, followed by those who named hard work and stress 16 (5.3%). A total of 143 (46.9%) of the respondents who attended fee paying ante natal clinics and 51(49.5%) from the free ante natal clinics perceived themselves to be vulnerable to malaria during pregnancy. All the respondents in both fee paying ante natal clinics (202) and free ante natal clinics (103) perceived malaria to be dangerous to the health of pregnant women and their fetus but 198(98.0%) respondents in the fee paying ante natal clinics and 98(95.2%) in the free ante natal clinics would confirm their pregnancy status to have treating malaria.

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Table 5

Respondents' Knowledge of the cause of Malaria

Cause	Types of Health Facility where mentioned		
	Fee Paying Ante Natal Clinics	Free Ante Natal Clinics	Total
(a) Mosquito	163 (80.7%)	70 (68.0%)	233 (76.4%)
(b) Unclean food and water.	10 (5.0%)	12 (11.7%)	22 (7.21%)
(c) Exposure to sunlight & environment	8 (3.96%)	12 (11.7%)	20 (6.6%)
(d) Hardwork /stress	8 (4.0%)	8 (7.7%)	16 (5.77%)
(e) No cause mentioned	13 (6.4%)	1 (0.9%)	14 (4.6%)
Total	202 (66.2%)	103 (33.8%)	305 (100%)

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Knowledge of Malaria Symptoms

On the knowledge of the symptoms of malaria in pregnancy, headache topped the list of symptoms of malaria identified by the respondents. The sub groups consist of free ante natal clinic 34.0% compared to fee paying ante natal clinic 30.0%. This was followed by respondents who identified high body temperature/feverish condition comprising free ante natal clinic group 29.0% compared to fee paying ante natal clinic group 27.0%. Furthermore, twenty percent of the respondents from fee paying ante natal clinic identified general body weakness/body pains compared to free ante natal clinic group thirteen percent (See figure 3).

Overall 70.5% of the respondents mentioned two or more malaria symptoms followed by 28.5% respondents who mentioned at least one symptom of malaria in pregnancy. This consists of 67.0% of the respondents from fee paying ante natal clinics and 78.0% from free ante natal clinics.

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Table 6

Distribution of Malaria Signs/Symptoms mentioned by Respondents

Symptoms	Health Facilities		
	Fee Paying Health Facilities	Free Health Facilities	Total
Two or more symptoms mentioned	137 (67.82%)	78 (75.73%)	215 (70.49%)
One symptom mentioned	62 (30.69%)	25 (24.27%)	87 (28.53%)
No Response	3 (1.49%)	0 (0%)	3 (0.98%)

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Figure 3

Respondents' knowledge of Malaria Signs/Symptoms

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Knowledge of the dangers of malaria in pregnancy to the mother

In respect of knowledge of dangers of malaria in pregnancy, abortion/miscarriage, 89 (29.2%) topped the list of the dangers identified consisting of 56 (27.7%) of fee paying ante natal clinics and 33 (32.4%) from free ante natal clinics (Table 7). Furthermore, 13.4% of the respondents from fee paying ante natal clinics identified high body temperature/fever, compared to 20.6% from free ante natal clinics. Fifty-four percent of the respondents from fee paying ante natal clinics compared to fifty-two percent from free ante-natal clinics identified 2 or more dangers of malaria in pregnancy. However, 12.8% of the respondents from fee paying ante natal clinics and 28.2% from free ante natal clinics identified one danger sign. More mothers in the 'FANC' group compared with the 'FANC' group could not list any danger of malaria in pregnancy (figure 1).

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Table 7

Respondents' Knowledge of dangers of malaria in pregnancy by the pregnant mother identified

Dangers of Malaria in Pregnancy	Type of Health Facilities					
	Fee Paying Ante Natal Clinics		Free Ante Natal Clinics		Total	
Abortion/Miscarriage*	56	(27.7%)	33	(32.0%)	89	(29.1%)
No dangers/don't know	59	(29.2%)	29	(28.2%)	88	28.9%)
High body temperature/fever*	27	(13.4%)	21	(20.4%)	48	(15.7%)
Loss of appetite*	36	(17.8%)	8	(7.8%)	44	(14.4%)
Loss of weight	11	(5.4%)	7	(6.8%)	18	(5.9%)
Low blood pressure	6	(2.9%)	2	(1.9%)	8	(2.6%)
Anemia*	5	(2.5%)	1	(0.9%)	6	(1.9%)
Typhoid	2	(0.9%)	2	(1.9%)	4	(1.3%)

* Correct responses

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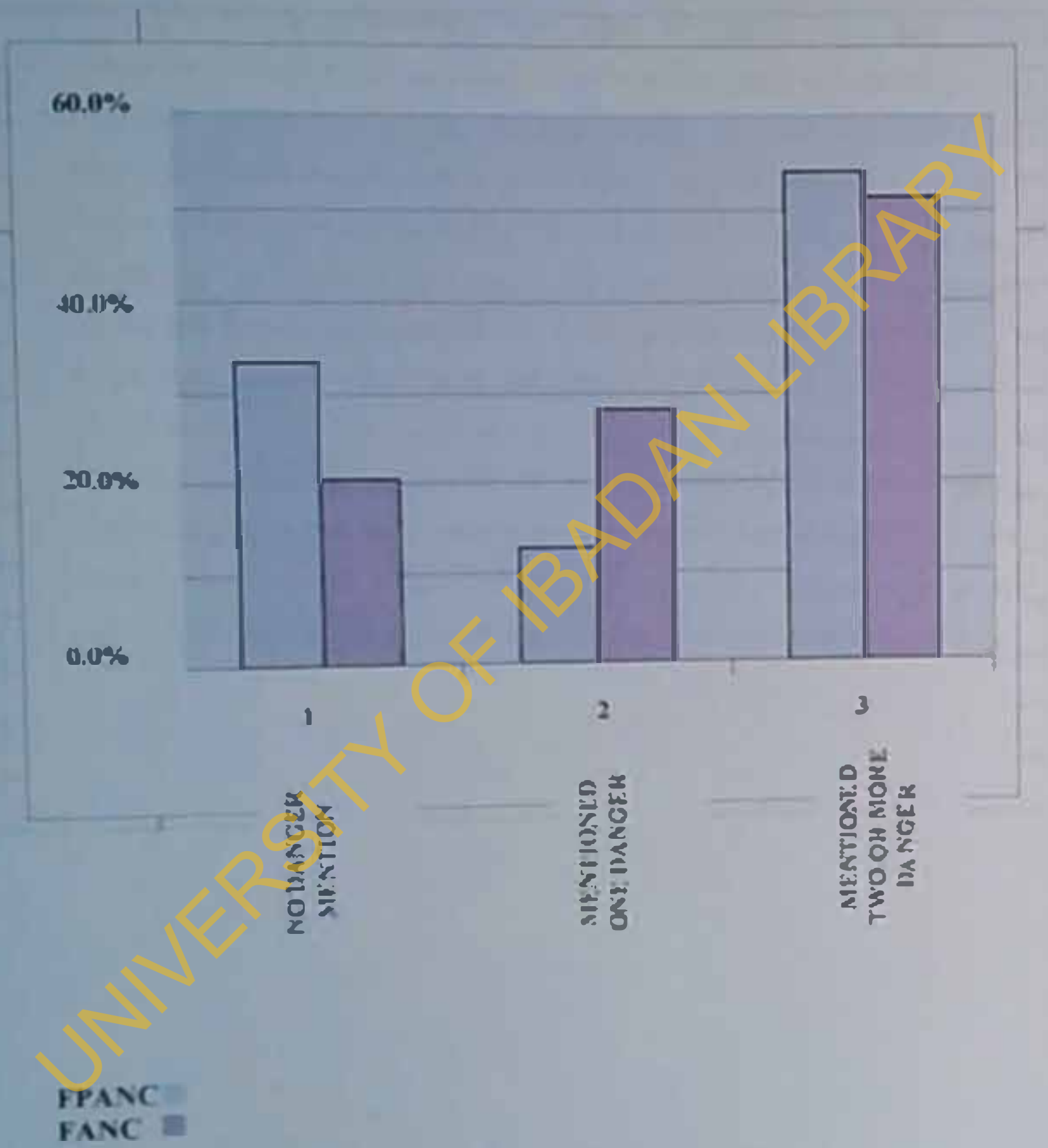
Figure 4

Respondents' knowledge of one or more dangers of malaria in pregnancy



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Knowledge of the dangers of malaria in pregnancy to the fetus

The respondents were asked to mention dangers of malaria in pregnancy to the fetus (baby in the womb), seventy-seven (25.2%) of the respondents identified death of the fetus. The break down showed that 55(27.2%) of the respondents were from fee paying ante natal clinics compared to twenty-two (21.1%) from free ante natal clinics (figure 5). However, 30 (29.1%) of the respondents from the free ante natal clinics identified jaundice compared to 30(17.8%) of fee paying ante natal clinics. Only a few of the respondents 23 (7.5%) identified low birth weight as one of the dangers of malaria in pregnancy to the fetus. This consists of 14 (6.9%) fee paying ante natal clinics and 9(8.7%) from free ante natal clinics. Only 45.1% respondents mentioned at least one danger of malaria in pregnancy while 10.7% mentioned two or more dangers. Those that mentioned one danger of malaria in pregnancy consist of 14.5% of the respondents from fee paying ante natal clinics and 16.6% free ante natal clinics compared with those who identified two or more dangers, 35.4% of the respondents from the fee paying ante natal clinics and 50.4% from the free ante natal clinics (see table 8)

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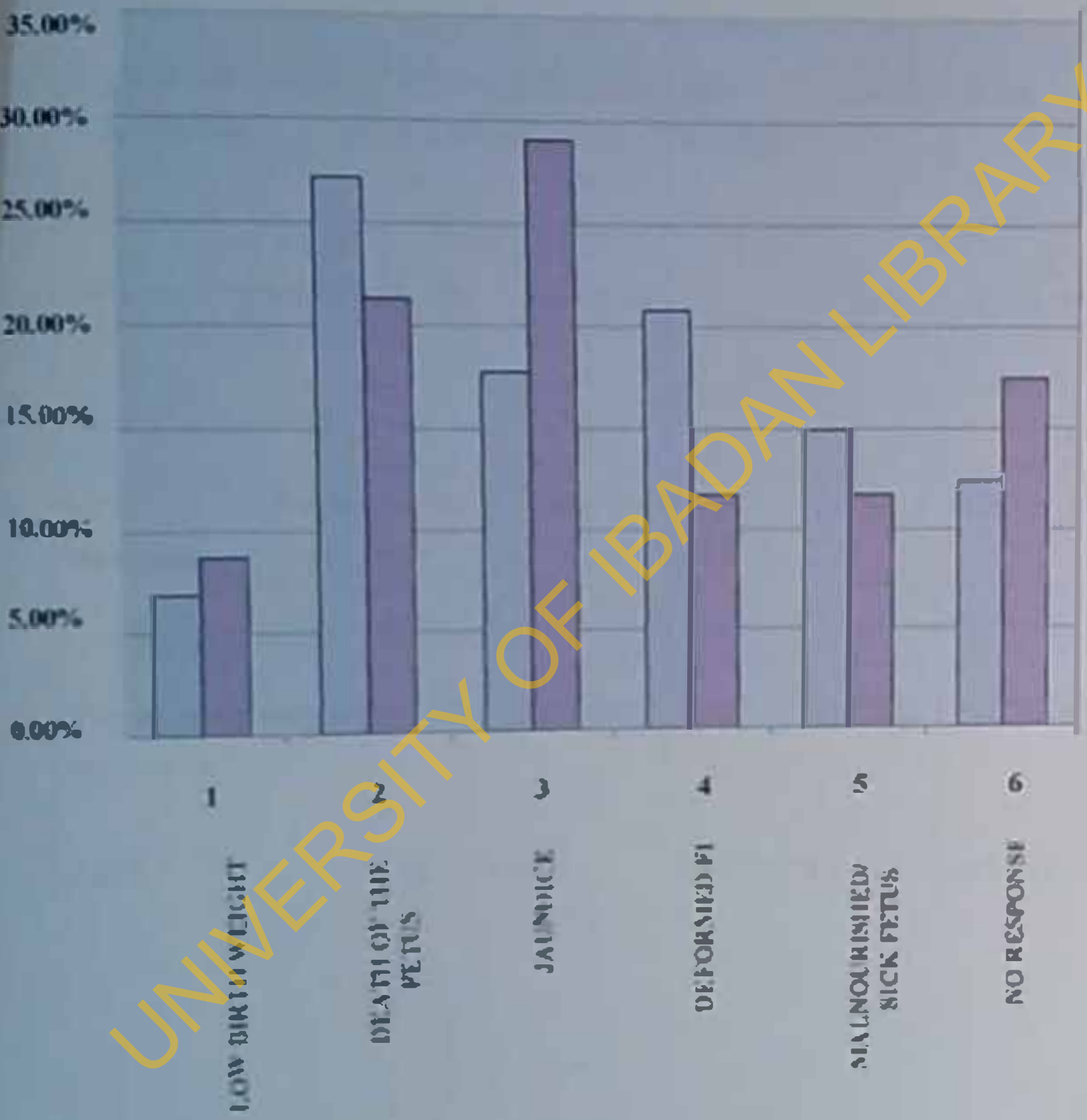
Figure 5

Respondents' Knowledge of dangers of malaria in pregnancy to the fetus



*Correct response

FPANC
FANC

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Table 8

Respondents' knowledge of the dangers of malaria in pregnancy to the fetus

	Type of Health Facilities		
Dangers of malaria in pregnancy	Free Paying Health Facilities	Fees Health Facilities	Total
No danger mentioned	40 (19.8%)	3 (2.9%)	43 (14.1%)
One danger mentioned	90 (44.5%)	48 (46.6%)	138 (45.2%
Two or more dangers mentioned	72 (35.6%)	52 (50.4%)	124 40.7%
Total	202 (66.2%)	103 (33.8%)	305 (100%)

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Respondents' Knowledge of Malaria Prevention Methods

Questions were asked to probe into the respondents' knowledge of the methods of preventing malaria. Use of environmental method of malaria prevention (bush and gutter clearing) (31.8%) topped the list consisting of 58 (28.7%) respondents from fee paying ante natal clinics and 18 (16.6%) from free ante natal clinics. This was followed by use of anti-malarial drugs 25.3% with 26.7% from fee paying ante natal clinics and 23.1% from free ante natal clinics. 26.3% of the respondents from fee paying ante natal clinics compared to 17.5% from free ante natal clinics identified the use of window/door nets (see table 9).

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Table 9

Respondents' knowledge of the methods for preventing malaria

Prevention methods	*No. of Respondents by type of Health Facility*					
	Fee Paying Health Facilities		Free Health Facilities		Total	
Using environmental method	58	(28.71%)	48	(46.60%)	106	(37.6%)
Using anti-malarial drugs (S-P)	53	(26.24%)	24	(23.30%)	77	(25.5%)
Using window/door nets	53	(26.24%)	18	(17.48%)	71	(23.3%)
Using insecticide/coils and repellants	20	(9.90%)	7	(6.80%)	27	(8.9%)
No Method Mentioned	11	(6.93%)	6	(5.83%)	20	(6.6%)
Using insecticide treated bednets	4	(2.0%)	0	(0%)	4	(1.3%)
Total	202 (66.2%)		103 (33.8%)		305 (100%)	

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Malaria Knowledge Score

The aspects of malaria knowledge assessed were causes, signs/symptoms, dangers of malaria in pregnancy to the mother and fetus, and malaria prevention methods. The knowledge was assessed using a 5 point knowledge scale. Each malaria question was awarded one point. Those who scored 2 points and below were considered to have low knowledge while those who scored 3 or more points were considered to have high knowledge of malaria. Majority of the respondents (60.1%) had high knowledge of malaria while (35.9%) of the respondents had a low knowledge score. The mean score of 2.67 (SD= 0.91) was found for the respondents from fee paying ante natal clinics compared to 2.41 (SD=0.89) for free ante natal clinics. The score difference in fee and free ante natal clinics was not statistically significant ($P = 0.10$) indicating that there is no relationship between knowledge of malaria and pattern of use of ante natal clinics (see table 10).

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Table 10

Differential of Respondents' Malaria Knowledge Scores by type of health facility

Knowledge of malaria score	Type of Health Facility				Total	
	Fee Paying ANC		Free ANC			
Low	65	(32.2%)	33	(32.0%)	98	(32.1%)
High	137	(67.8%)	70	(67.9%)	207	(67.9%)
Total	202	(66.2%)	103	(33.8%)	305	(100.0%)
Mean Score	2.67(SD=0.91)		2.68(SD=0.89)			

Chi square 1.00

P value 0.18

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Knowledge of Malaria in pregnancy Chemoprophylaxis

The overall Knowledge of malaria in pregnancy chemoprophylaxis (doses of S-P, benefits and purpose) was scored on an 8 point scale. Each question on malaria in pregnancy chemoprophylaxis was awarded a point and those who scored 0 - 3 points were considered low knowledge while those who scored 4 points and above were considered high knowledge score. When the scores were summed up, 95.7% of the respondents had high knowledge of malaria in pregnancy chemoprophylaxis while 4.3% of the respondents had low knowledge.

A break down of the knowledge score showed that knowledge of malaria in pregnancy chemoprophylaxis was more among the respondents (96.4%) from free ante natal clinics compared to (95.5%) from fee paying ante natal clinics. The mean score of 1.53 (SD) (0.22) was found for the respondents from free health facilities compared with 1.71 (SD) (0.24) for fee paying health facilities. The score difference in fee paying and free health facilities was not statistically significant (P>0.05) indicating that there is no relationship between knowledge of malaria in pregnancy chemoprophylaxis with S-P and health facilities used by the respondents (see table

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Table II

Respondents' knowledge about chemoprophylaxis during pregnancy

	No. of Respondents by type of health facility					
Knowledge of Chemoprophylaxis	Free ANC		Fee ANC		Total	
Low Knowledge	9	(4.5%)	4	(3.9%)	13	(4.3%)
High Knowledge	193	(95.5%)	99	(96.1%)	292	(95.7%)
Total	202	(66.2%)	103	(33.8%)	305	(100.0%)
Mean score	1.71	(SD 0.24)	1.53	(SD 1.53)		

Chi square (Yates corrected) 1.01

P value (Yates corrected) 0.60

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Awareness and usage of Sulphadoxine Pyrimethamine (S-P)

1. Awareness

A total of 97.1% of the respondents reported that they had ever heard of IPT using S-P. This consists of 98.8% of the respondents from fee paying ante natal clinics and 87.4% from free ANC. Awareness was more among the multigravidea (second pregnancies or more) 95.6% compared to primigravidae (first pregnancies) 92.0%. The subgroup consists of 65.8% of the respondents from fee paying ante natal clinics and 31.2% from free ante natal clinics.

2. Use of S-P

Overall, 98.0% of the respondents disclosed that they had used S-P during their last pregnancy. The subgroup consists of, 98.0% of the respondents from fee paying ANC and 98.1% respondents from free ANC (see table 14). Further probe revealed that among the respondents in fee paying ANC, 94.5% reportedly took the first dose of S-P (IPT 1), while among those in the free ANC's, 98.1% claimed to have done so. Furthermore, 72.1% of the respondents took the second dose of S-P(IPT 2). This consists of, 79.7% of the respondents from fee paying ante natal clinics and 57.3% from free ante natal clinics. Only 23.6% of the women who took IPT 1 could not go further to take IPT 2. A total chart of the figure showed that 11.8% of the women are from the fee paying ANC's while 10.7% were from the free ANC's.

On the other hand, among the respondents only 12.3% reported for the first dose of S-P at the recommended pregnancy age of 16 -23 weeks. This consists of, 13.1% of the respondents from fee paying ante natal clinics and 10.9% from free ante natal clinics. Furthermore, a total of 87.7% of the respondents reported for first dose of S-P at the 24th week or more. This comprises of, 86.9% of the respondents from fee paying ante natal clinics and 89.1% from free ante natal clinics. Overall mean pregnancy age reported for 1st dose of S-P by the respondents was 24 weeks old. A group mean pregnancy age at which 1st dose of S-P was swallowed, 24 (SD ± 5.45) weeks was found for FPANC group and 24 (SD ± 5.60) weeks for FANC. The result showed that the difference in age of pregnancies presented for 1st dose of IPT from both groups was statistically significant (p= 0.05) (see table 15).

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Table 12

Respondents Awareness of IPT using Sulphadoxine-pyremethamine

Awareness	No. of Respondents by type of Health Facilities		Total
	PHANC	PANC	
Ever heard of IPT using S-P	198 (98.0%)	90 (87.4%)	288 (94.1%)
Never heard of IPT using S-P	4 (2.0%)	13 (12.6%)	17 (5.6%)

Chi-square (X^2) Yates corrected = 12.72

P value = 0.00

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Table 13

Respondents' Ever use of Sulphadoxine-pyrimethamine

Use of S-P	No. of Respondents by type of Health Facilities		Total
Ever used of IPT using S-P	FPANC	PANC	
Ever used S-P	198 (98.0%)	101 (98.1%)	299 (98.0%)
Never used S-P	4 (2.0%)	2 (1.9%)	6 (2.0%)

Chi-square (X^2) Value corrected = 0.17

P value = 0.67

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Table 14

Distribution of Respondents Who Received doses of S.P

Doses of IPT	No. of Respondents by type of Health Facilities		Total
	FPANC	PANC	
First dose IPT1	191 (94.6%)	101 (98.1%)	292 (95.7%)
Second dose IPT2	161 (79.7%)	59 (57.3%)	220 (72.1%)

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Table 15

Periods Respondents Reported for First Dose of S.P (IPTp) by Health Facilities

Period Reported	No. of Respondents by type of Health Facilities		Total
	PHANC	PANC	
Those that reported at the 16th week	25 (13.1%)	11 (10.9%)	36 (12.3%)
Those that reported after 16th week	166 (86.9%)	90 (89.1%)	256 (87.7%)
Mean Age Score of pregnancies presented for IPTp:	24 weeks (SD=5.60)	24 weeks (SD=5.45)	

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Awareness and usage of insecticide treated bed nets (ITNs)

Results showed that 61.8% of the respondents from the private urban clinics were aware of insecticide treated bednets use during pregnancy compared to 58.3% from free ANC's. Knowledge of ITNs use was measured on a 3 point scale. Scores of 0 - 1 points were graded as low while 2 points and above were graded as high knowledge. Overall, 40% of the respondents showed high knowledge of the intervention. This comprised of 41.5% of the respondents from PPANC and 31.1% from FANC. On the other hand, majority of the respondents (60%) had low knowledge score. The subgroup consists of 58.1% from PPANC and 68.9% from FANC. The groups mean knowledge score of 1.7±1.3 was found in PPANC group compared with 1.0±1.38 for FANC's.

However, 11.8% of the respondents reported to have ever used ITNs during their last pregnancy. This consists of 14.9% respondents from the private ANC's and 5.8% from free ANC's. Furthermore, only 8.9% of the respondents bought ITNs, comprising those who live in the more core (7.8%), transitional (5.9%) and peripheral (11.9%). Intention to use insecticide treated bednets in future pregnancies was high among respondents. 11.0% in their last pregnancies, while only 6.3% in second or more pregnancies. At the private clinics level, intention to use ITNs was more in the respondents (10.1%) from the private ANC's compared to (2.9%) from free ANC. Among those who bought ITNs, 88.8% of them consistently slept under the nets. Results showed that more core respondents were more consistent use of the nets 7.8% of those who bought net from this group consistently used their nets.

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Table 16

Distribution of the Respondents' Awareness of ITN use during pregnancy

Awareness	No. of Respondents by type of Health Facilities				Total	
	PANC		FANC			
Those aware of ITN use during pregnancy	125	(61.9%)	60	(58.3%)	185	(60.7%)
Those not aware of ITN use during pregnancy	77	(38.1%)	43	(41.7%)	120	(39.3%)

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Table 17

Respondents' Knowledge of the Use of ITN during pregnancy

	No. of Respondents by type of health facility		
Knowledge of ITN Use during pregnancy	PANC	ANC	Total
Low Knowledge	112 (55.4%)	71 (68.9%)	183 (60.0%)
High Knowledge	90 (44.5%)	32 (31.0%)	122 (40.0%)
Mean score	2.7±0.43	1.9±0.38	

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Table 18

Distribution of Respondents who consistently slept under the ITNs

	Health Facilities		
Consistent use of ITN	**Fee Paying Health Facilities**	**Non Fee Paying Health Facilities**	**Total**
Bought ITN and consistently slept under the net	**21 (87.5%)**	**3 (100%)**	**24 (92.31%)**
Bought ITN and did not consistently sleep under the net	**3 (12.50%)**	**0 (0%)**	**3 (0.98%)**

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Insecticide Treated Bednets (ITNs) Re-treatment

Results showed that 8.8% of the respondents who bought ITNs obtained it from fee paying ante natal clinics and 2.9% from free ante natal clinics. 3.0% of the respondents bought their nets less than 6 months before the survey while 5.9% of the respondents purchased their nets more than 6 months. Furthermore only 1.5% retreated the nets and 2.6% of the respondents did not retreat their nets. 11.0% of the respondents in their first pregnancies were more in procuring ITNs compared with (6.3%) of the respondents who have had second or more pregnancies. Also, 7 (4.9%) multigravedar respondents (second or more pregnancies) retreated their nets 6 months after purchase compared to (3.0%) of the respondents in their first pregnancy. On the other hand 9 (37.5%) respondents from fee paying ANC who bought ITNs (n=24) retreated their nets while only 1 (33.3%) from free ANC s remembered to retreat their nets (n=3) (See table 19) All the respondents who retreated their bednets after 6 months were either prompted by their husbands 2 (20.0%) or the health workers 8 (80.0%). However, 7 (70.0%) of the respondents declined their intention to retreat their bednets in future pregnancy without being prompted to do so.

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Table 19

Distribution of Respondents who bought and re-treated their ITN within the six months period

	Health Facilities					
Re-treatment within six months	PANCs		FANCs		Total	
Bought ITN and Re-treated	9	(37.5%)	1	(33.3%)	10	(37.0%)
Bought ITN and did not Re-treat	15	(62.5%)	2	(66.6%)	17	(63.0%)
Total	24	(88.9%)	3	(11.1%)	27	(100.0%)

Fisher Exact: 1-tailed

P-value = 0.69

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Barriers to accessing sulphadoxine-pyrimethamine(S-P), Insecticide Treated Net (ITNs) and Re-treatment kits

The respondents identified barriers that hindered them from accessing the intervention. At the health facility level, 52 (25.7%) respondents from PANC identified lack of awareness and skill for ITN use as a barrier to access ITN while 61 (30.2%) misconceived ITN use to be only for those who were sick. Furthermore, 58 (28.7%) of the respondents indicated that they use other methods of preventing mosquito bites and do not need insecticide treated beds. The methods mentioned as alternative include the use of insecticide spray, repellent coils, window nets, butter and bush clearing. In the PANC group, only 12 (11.7%) of the respondents could not access the intervention (ITNs) because they thought it was prescribed for those sick and under 3 months of pregnancy period while 38 (36.8%) identified high cost of ITNs as barriers to access the intervention. A total number of 27 (26.2%) of the respondents disclosed that non-availability of ITN hindered them from accessing it during their pregnancy period (see table 20a).

Furthermore, 30 (14.9%) of the respondents from PANC cited perceived negative drug effects to the fetus while 12 (5.9%) identified cost as the drug (S-P) was expensive at N50 per dose compared to 26 (25.2%) and 1 (1.0%) respondents from PANC respectively (see table 20b). On ITNs re-treatment, 15 (62.5%) of the respondents who bought nets in the PANC but failed to retreat after 6 months as recommended cited various reasons for their inaction. Those who cited lack of time to retreat the nets were 2 (25.0%), 3 (37.5%) identified cost while only 1 (1.2%) of the respondents cited non-availability of re-treatment kits as hindrances to retreat their nets. Another 2 (25.0%) said that they could not retreat the nets because the net was not in use any longer while only 1 of the respondents failed to retreat her net due to lack of re-treatment knowledge (see table 20c).

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Table 20a

Barriers identified to impede access to (ITN) by pregnant women

Barriers	Ante natal Clinics				Total	
	IPAP		IANC			
ITN use only for the sick	61	(30.2%)	12	(11.7%)	73	(24.0%)
Use of alternative methods	58	(28.7%)	15	(14.6%)	73	(24.0%)
Lack of skill on ITN use	52	(25.7%)	11	(10.7%)	63	(20.6%)
Cost	12	(5.9%)	38	(36.8%)	50	(16.4%)
Non-availability of ITN	19	(9.4%)	27	(26.2%)	46	(15.1%)
Total	202	(66.2%)	103	(33.8%)	305	(100%)

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Table 20b

Barriers identified to impede access to S.P by pregnant women

Barriers	Ante natal Clinics				Total	
	IPANC		LANC			
No problem	153	(75.7%)	3	(2.9%)	156	(51.1%)
Drug is supposed to be free	2	(0.99)	70	(68.0%)	72	(23.6%)
Perceived negative drug effects to the baby	30	(14.9)	26	(25.2%)	56	(18.4%)
Cost	12	(5.9%)	1	(1.0%)	13	(4.3%)
Drug too strong and not to been taken without food	5	(2.5%)	3	(2.9%)	8	(2.6%)
Total	202	(66.2%)	103	(33.8%)	305	(100%)

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Table 20c

Barriers identified to impede access to re-treatment by pregnant women

Barriers	Ante natal Clinics				Total	
	HANC		LANC			
No problem for we were informed to retreat after six months	9	(37.5%)	1	(33.3%)	10	(37.0%)
Forget to retreat the net	6	(25.0%)	0	(0.0%)	6	(22.2%)
Cost	3	(12.5%)	0	(0.0%)	3	(11.1%)
Net no longer in use	2	(8.3%)	1	(33.3%)	3	(11.1%)
No time	2	(8.3%)	0	(0.0%)	2	(7.4%)
Lack of skill	1	(4.2%)	1	(33.3%)	2	(7.4%)
Kit not available	1	(4.2%)	0	(0.0%)	1	(3.7%)
Total	24 (88.9%)		3 (11.1%)		27 (100%)	

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TEST OF HYPOTHESIS

Hypothesis One

The hypothesis stated that there is no difference in Malaria knowledge (causes, prevention, and dangers of malaria in pregnancy) between pregnant women who received ante natal care in fee paying and free ante natal clinics. Table 21 shows the results of the malaria knowledge scores. Sixty-five (32.2%) and one hundred and thirty-seven (67.8%) of the fee paying respondents were in the low and high knowledge score in comparison with thirty-three (32.0%) and seventy (68.0%) of the respondents in free ante-natal clinics respectively. Those who scored 0-2 points were recorded as low knowledge score while 3-5 points for high knowledge group. The difference in the knowledge score between respondents who attended fee paying and free ante-natal clinics was not statistically significant ($p > 0.05$). Therefore, the null hypothesis is accepted and concluded that there is no statistically significant relationship between malaria knowledge and choice of ante natal clinics.

Table 21

Comparison of Respondents' Malaria Knowledge Scores by type of health facility

Knowledge of malaria score	Type of Health Facility				Total	
	Fee Paying ANC		Free ANC			
Low	65	(32.2%)	33	(32.0%)	98	(32.1%)
High	137	(67.8%)	70	(68.0%)	207	(67.9%)
Total	202	(66.2%)	103	(33.8%)	305	(100.0%)

Chi-square (X^2) 0.02

P-value 0.10

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The next hypothesis stated that there is no difference in the knowledge of perceived benefits of chemoprophylaxis for malaria in pregnancy and willingness to pay for IPT use among pregnant women who attended lee and lire ante natal clinics. Tables 22 present the results of knowledge of perceived benefits of chemoprophylaxis and willingness to pay for S-P. Two hundred and eight (98.1%) of the respondents in high knowledge score of benefits of chemoprophylaxis compared to seventy eight (83.9%) of the respondents in the low knowledge score were willing to pay for S-P respectively. Furthermore, 0 -3 scores were considered low knowledge group while 4 scores and above were considered high knowledge group. The difference in the knowledge score between respondents with high knowledge of perceive benefits of chemoprophylaxis (S-P) and willingness to pay for the recommended intervention (P- 0.00) was statistically significant (p<0.05). Therefore, the hypothesis is rejected and concluded that there is statistically significant relationship between knowledge of perceived benefits of chemoprophylaxis and willingness to pay for S-P use.

Table 22

Comparison of respondents' knowledge of perceived Chemoprophylaxis Benefits and Willingness to pay for S-P use

	High knowledge of benefits of chemoprophylaxis	Low knowledge of benefits of chemoprophylaxis	Total
Willing to pay for S-P	208 (98.1%)	78 (83.9%)	286 (93.8%)
Not willing to pay for S-P	4 (1.9%)	15 (16.1%)	19 (6.2%)
Total	212 (69.5%)	93 (30.5%)	305 (100.0%)

Chi square (X^2) = 20.07

P-value 0.000

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Table 23 highlights the results of the knowledge of perceived benefits of ITN use and willingness to pay for ITNs. One hundred and nineteen (97.5%) of the respondents in the high knowledge of the benefits of ITNs use compared to seventy-one (38.8%) were willingly to pay for ITNs. Similarly, scores, 0-3 was used for the knowledge score between respondents with high knowledge of perceived benefits of ITN use and willingness to pay for the recommended intervention (ITN) ($p<0.05$) was statistically significant ($p<0.05$). Therefore, the null hypothesis is rejected and concluded that there is statistically significant relationship between knowledge of perceived benefits of ITN use and willingness to pay for ITNs.

Table 23

Comparison of respondents' knowledge of perceived Benefits of ITNs use and Willingness to pay for ITNs

	High knowledge of benefits of ITNs Use	Low knowledge of benefits of ITNs Use	Total
Willing to pay for ITNs	119 (97.5%)	71 (38.8%)	190 (62.3%)
Not willing to pay for ITNs	3 (2.5%)	112 (61.2%)	115 (37.7%)
Total	122 (40.0%)	183 (60.0%)	305 (100.0%)

Chi square (X^2) 115.05.
P-value 0.000

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Hypothesis two

The second hypothesis stated that there is no relationship between such predem variables such as respondents' age, educational status, parity, wealth quintile and occupation and willingness to adopt IPT use in future pregnancies.

Table 24 showed the results of the chi-square test used for the hypothesis that there is no relationship between respondents' age and willingness to adopt IPT use in future pregnancies. Ninety-two (44.2%) of the respondents in the 24 -29 age buckets agreed to adopt S-P and ITNs use in future pregnancies compared to nineteen (9.1%) respondents in the age group 36 - 41. There was no significant association between respondents' age and willingness to adopt IPT use as recommended (p 0.67). The difference in adoption of IPT according to the ages of the respondents was not statistically significant (p>0.05). Therefore, the null hypothesis cannot be rejected and concluded that there is no statistically significant relationship between ages of the respondents and willingness to adopt IPT use (S-P and ITNs). However, by proportion 132 (63.3%) of the respondents between the age of 24 -29 years were more willing to adopt IPT use followed by 101 (33.1%) of the respondents between the age buckets of 30 - 35 years.

Table 24

Relationship between respondents' ages and intention to adopt IPT (use of S-P and ITN) in future pregnancies

Age	Willing to adopt IPT (S-P &ITN)		Not willing to adopt IPT (S-P & ITN)		Total	
18 - 23	32	(15.4%)	15	(15.5%)	47	(15.4%)
24 -29	92	(44.2%)	40	(41.2%)	132	(43.3%)
30 - 35	65	(31.3%)	36	(37.1%)	101	(33.1%)
36 - 41	19	(9.1%)	6	(6.2%)	25	(8.2%)
Total	208	(68.2%)	97	(31.8%)	305	(100.0%)

Chi square (X^2) = 1.53

P-value (0.67)

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Table 25 presents the results of the chi-square test used for the null hypothesis that there is no relationship between respondents' educational level and willingness to adopt IPT use in future pregnancies. One hundred and sixty-seven (86.1%) of the respondents who were in the post -primary education groups were willing to adopt S-P and IPNs use in future pregnancies compared to those that never attended school 8(3.8%), primary school in-completed 5(2.4%) and primary school completed 28(13.5%). There was no significant association found between respondents' educational level and willingness to adopt IPT use in future pregnancies (p 0.13). Therefore, the hypothesis is rejected (p>0.05) and concludes that there is no statistically significant relationship between respondents' educational status and willingness to adopt IPT use in future pregnancies. Furthermore, by proportion respondents with post-primary education were more willing to adopt the use of the recommended intervention (IPT). The subgroup showed that 129 (61.3%) of the respondents who had completed secondary school and 82 (39.0%) of the higher institution were more willing in their future intention to adopt IPT use.

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Table 25

Relationship between respondents' Educational Level and intention to adopt IPT (use of S-P and ITN) in future programmes

Educational Level	Willing to adopt IPT (S-P and ITN)	Not willing to adopt IPT (S-P and ITN)	Total
Never attended school	8 (3.8%)	2 (2.1%)	10 (3.3%)
Primary school in-completed	5 (2.4%)	0 (0.0%)	5 (1.6%)
Primary school completed	28 (13.5%)	20 (20.6%)	48 (15.7%)
Secondary school in-completed	17 (8.2%)	14 (14.4%)	31 (10.2%)
Secondary school completed	92 (44.2%)	37 (38.2%)	129 (42.3%)
Higher institution	58 (27.9%)	24 (24.7%)	82 (26.9%)
Total	208 (68.2%)	97 (31.8%)	305 (100.0%)

Chi square (X^2) = 8.54

P-value = 0.13

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Tables 26 presents the results of the chi-square tests used for the null-hypothesis that there is no relationship between respondents' parity and intention to adopt IPT use in future pregnancies. One hundred and fifty (72.1%) of the respondents in the 2nd pregnancy or more group will be willing to use S-P and ITNs in future pregnancies compared to 58 (27.9%) in the 1st pregnancy group. The difference in future intention to adopt IPT use in the respondents' parity (p 0.00) was statistically significant (p<0.05). Therefore, the null hypothesis is rejected and the study concludes that there was a significant association between respondents' parity and their future intentions to use the recommended intervention.

Table 26

Relationship between respondents' parity and intention to adopt IPT (use of S-P and ITNs) in future pregnancies

	Willingness to adopt IPT (use of S-P and ITN)		Total	
	Willing to adopt IPT	Not willing to adopt IPT		
1st Pregnancy	58 (27.9%)	42 (43.3%)	100 (32.8%)	
2nd Pregnancy or more	150 (72.1%)	55 (56.7%)	205 (67.2%)	
Total	208 (68.2%)	97 (31.8%)	305 (100.0%)	

Chi-square (Mantel Haenszel X² = 21.11

P-value = 0.000

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In table 27a. ownership of household items was highlighted. The results showed that ownership of electrical and electronic household items was common among the respondents. However, respondents from free ante-natal clinics own more of refrigerator 71%, bicycles 11% and car 55% compared to fee paying ante-natal clinics. Furthermore, respondents from fee paying ante-natal clinics own more of gas cooker 25% and motorbike 26% compared to free ante-natal clinic group (see table 27a for more details).

Table 27a

Comparison of Ownership of Household items by type of health facility

	Type of Health Facility		
Household Items	Fee Paying ANC (N=202)	Free ANC (N=103)	Total (N=305)
Electricity	198 (98.0%)	101 (98.0%)	299 (98.0%)
Electric fan	187 (93.0%)	101 (98.0%)	288 (94.0%)
Electric Iron	175 (87.0%)	97 (94.0%)	272 (89.0%)
Radio	200 (99.0%)	102 (99.0%)	302 (99.0%)
Television	194 (96.0%)	98 (95.0%)	292 (96.0%)
Telephone (including mobile)	140 (69.0%)	87 (85.0%)	227 (74.0%)
Refrigerator	115 (57.0%)	76 (74.0%)	191 (63.0%)
Gas cooker	25 (12.0%)	17 (17.0%)	42 (14.0%)
Bicycle	9 (5.0%)	10 (10.0%)	19 (6.0%)
Motorbike	26 (13.0%)	11 (11.0%)	37 (12.0%)
Car	73 (36.0%)	55 (53.0%)	128 (42.0%)

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Table 27b shows the results of the chi square test for the null hypothesis stating that there is no relationship between respondents' wealth quintile and intention to use IPT in future pregnancies. Ninety seven (46.6%) of the respondents in high wealth quintile group were willing to adopt IPT use compared to middle wealth quintile 67 (32.2%) and low wealth quintile 44(21.2%). The difference in future intention to use IPT by the respondents' wealth quintile (p= 0.00) was statistically significant as (p <0.05). The null hypothesis is rejected and concluded that there was a significant association between respondents' wealth quintile and their future intentions to use IPT products.

Table 27b

Relationship between respondents' wealth quintile and intention to adopt IPT (use of S-P and ITNs) in future pregnancies

	Willingness to adopt IPT (use of S-P and ITN)		Total	
	Willing to adopt IPT	Not willing to adopt IPT		
Low wealth quintile	44	(21.2%) 51	(52.6%) 95	(31.0%)
Middle wealth quintile	67	(32.2%) 9	(9.3%) 76	(25.0%)
High wealth quintile	97	(46.6%) 37	(38.1%) 134	(44.0%)
Total	208	(68.2%) 97	(31.8%) 305	(100.0%)

Chi square (X^2) = 36.0

P-value (0.0)

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Furthermore, table 28 highlights the result of the chi-square tests used for the null-hypothesis that there was no relationship between respondents' occupation and willingness to adopt IPT use in future pregnancies. One hundred and twenty-eight (61.5%) of the respondents in the unskilled group were willing to adopt IPT use compared to skilled 70(33.7%) and students 10(4.8%) groups. The difference in future intentions to adopt IPT use according to the respondents' occupation (p=0.05) was statistically significant (p<0.05). Therefore, the null hypotheses was rejected and concluded by saying that there was significant association between respondents' occupation and their future intentions to use the recommended interventions.

By proportion, 205 (67.2%) of the respondents of the second pregnancies or more, 134 (64.4%) of those in high wealth quintile and 203 (66.6%) of the unskilled occupation were more willing in their future intentions to adopt IPT use as recommended.

Table 28

Relationship between respondents' Occupation and intention to adopt IPT (use of S-P and ITNs) in future pregnancies

	Willingness to adopt IPT (use of S-P and ITN)				Total	
	Willing to adopt IPT		Not willing to adopt IPT			
Unskilled	128	(61.5%)	75	(77.3%)	203	(66.6%)
Skilled	70	(33.7%)	18	(18.6%)	88	(28.9%)
Student	10	(4.8%)	4	(4.1%)	14	(4.5%)
Total	208	(68.2%)	97	(31.8%)	305	(100.0%)

Chi square (X^2) 7.77

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CHAPTER FIVE

DISCUSSION

This chapter focuses on the discussions of the salient results of the study.

Socio-demographic Characteristics

The age distribution of the respondents showed that most of the respondents fall within the age range of 18-28 years which corresponds with active reproductive age group for women (Lawson et al. 2011). Higher proportion of the respondents in the fee paying ante natal clinics had secondary and tertiary education compared to those that used free ante natal clinics. Pregnant women with formal education has been reported to use less of anti-malarial drugs and the selection of drugs to use depends on the users' knowledge - a situation which promotes self-medication (Olaleke, 2004) and lengthens the time the pregnant woman would likely visit ante natal clinic.

This finding was collaborated by the NDHS 2013, which finds that women in the rural areas use less anti-malarial drugs compared to their counterparts in the urban areas. Most of the respondents were currently married with higher proportion in the free ante-natal clinic group compared to the fee paying ante-natal clinic group. Married pregnant women are exposed to social support which is expected to be high in a typical African setting and encourage them to take care of their pregnancies in view of the high value placed on the expected pregnancy outcome (Lawoko et al, 2011).

However, high social support may predispose pregnant women to late registration for ante natal clinic thereby making them to have late contact with health workers. Such late contact could lead to missed opportunities of learning malaria preventive and control measures through health talks. A higher proportion of the respondents with second or more pregnancies came from free ante natal clinics compared to fee paying ante natal clinic. This finding is suggestive of possible increased economic burden associated with caring for more children.

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Respondents' Knowledge of malaria

The 'mosquito' was correctly identified as the biological agent that facilitates the transmission of malaria by more than half of the respondents from fee paying and free ante clinics. There were however, some misconceptions about the occurrence of malaria such as the implication of hard work/strenuous eating of oily foods and consumption of unclean food with the occurrence of malaria. This implies that gaps in malaria knowledge still exist among some pregnant women. These misconceptions are deeply rooted in traditional beliefs regarding the causation of malaria (Onwujekwe et al. 2001; Awodeyi, 2003). Overall, while respondents' knowledge on malaria symptoms was high especially among FANC, gaps also exist as some respondents were unable to state more than one malaria symptom (fever). Common symptoms of malaria include fever, headache, body weakness and pains (Awodeyi et al. 2003).

Overall, the perception of vulnerability to malaria during pregnancy was high especially among respondents in the fee paying group. Perceived vulnerability to a health condition is crucial to initiate preventive health behaviour (Rosenstock, 1974). Appropriate interventions are needed to ensure that all women appreciate that pregnancy makes women more vulnerable to malaria. Furthermore, pregnancy itself is associated with some forms of malaria symptoms such as fever, headache, vomiting and body weakness (Oladele 2001; and Nwana, 1987), which should not be confused with signs and symptoms of malaria. What was identified as the symptoms of malaria are sometimes suggestive of the pattern of the adopted choices of malaria prevention methods (Onwujekwe, 2002).

The knowledge of the use of environmental health approach in the prevention of malaria such as bush and gutter clearing was higher among respondents in non-fee paying facilities. On the other hand, more respondents in fee paying establishments mentioned the use of anti-malarial drugs. This may be due to the different information exposure on the prevention and control of malaria. It is not unexpected that fee paying health facilities will emphasize drug use to increase purchase and profits. Although the intervention focused on the use of Insecticide Treated Nets (ITNs) for the control and prevention of malaria in pregnancy, very few of the respondents adopted ITNs use. Most of the respondents who used the technology were from fee paying health facilities. What may have accounted for the differential pattern of use of ITNs among the two categories of pregnant women may be the difference in the philosophy

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of the proprietors of the two types of health facilities where the intervention took place

In public (Government) health care facilities, certain primary health services are provided free of charge. Respondents in such facilities are therefore used to such free health care services including the management of malaria which has become one of the cardinal health programme of successive governments of Oyo State (Abidi, 2003). On the other hand, all services whether primary, secondary or tertiary attract monetary charges in private health care facilities including mission owned health care facilities. Respondents in these health care facilities are those who would be willing to pay for the health services including ITNs for the prevention of malaria in pregnancy.

Generally, there is low ITN ownership in south western Nigeria including Ibadan (NDHS, 2003). The procurement free ITNs to women who are pregnant for the first time and who attend government and mission clinics is one of the policies of the RBM initiatives in Nigeria. This is a major challenge. At the moment, ITN is procured centrally by the Federal Ministry of Health and funded through contributions by the three tiers of the government. The Federal Government provides 70% of the funds while the state and local government levels are expected to provide 30% (FMOH, 2003). Most times, these levels of government do not agree. This may be due to the fact that health is in the concurrent list of the 1999 constitution (Nigeria constitution, 1999) which did not appropriately stipulate the level of powers that may exist between the three tiers of government. One of the social complications of this is the poor procurement and distribution of the ITN leading to non-availability of the products.

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Respondents' Knowledge of Benefits of Chemoprophylaxis and use of Sulphadoxine-Pyrimethamine

The knowledge of chemoprophylaxis and the associated benefits in the management of malaria in pregnancy in terms of doses of S-P, age of pregnancy and period at which pregnant women should present themselves for first S-P dose are high. The mean pregnancy age at which the women presented presented for the first dose of IPT1 was 23 weeks(third trimester) for those that attended for antenatal clinics compared to 24 weeks for late antenatal. During the interviews, it was recommended that pregnant women should present themselves for S-P during the second trimesters (16-24 weeks) in line with the RBM policy. Late presentation at the ANC visits reduces women's chances of receiving appropriate number of doses. This has been perceived by the health workers as one of the limiting factors for the provision of the 2nd dose of the S-P (Ayeni, 2002).

The results tend to suggest that knowledge of chemoprophylaxis and its perceived benefits, educational status and age have no effects on pregnant women registering for ANC early. This finding contradicts other reported situations in which education was associated with early and continued ANC visits (Schulz et al 1993). The respondents' late registration for ANC may be traced to the antecedent factors which may be rooted in the traditional beliefs of the Yorubas that early exposure of pregnancy to strangers attracts the attention of the witches or evil forces (Lawoyin et al. 2001).

A study carried out among pregnant women in Ibarapa Central Local Government Area of Oyo State showed that majority of the pregnant women register for ANC at the primary health care centers between six and seven months (third trimester) (Ayeni, 2002). The implication of late registration for ANC is that pregnant women receive professional care and health education late. A second implication is the risk to self medication which may promote non-compliance to drug regimen as it negates the directly observed therapy strategy of IPT intervention. This situation if unchecked could lead to drug resistance. A monograph prepared by the Reproductive health unit of the Federal Ministry of Health (2003) shows that lack of decision-making power and insufficient access to information are factors which prevent women from making strategic decision to seek medical help early and at the crucial time.

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The pregnant women interviewed in this study were received and welcomed S-P in the presence of the health workers during routine ANC visits (Directly Observed Therapy) probably accounted for the large number of the respondents who took S-P. Another factor could be the health talk and medication counseling given to women during routine ante-natal clinics visits by midwives to encourage expectant mothers to only take drugs prescribed by the health workers. The third factor might be the availability of sachet water (pure water) which was commonly available and affordable. Lastly, Ashiwaju-Soniki et al 2011 in a study reported that lack of water supply and cuts were major constraints to S-P use in Ekiti.

It was noted that women in their second or more pregnancies used S-P more and were ever willing to pay for S-P compared to those in their first pregnancies. This probably relate to the level of social support available to the women in their first pregnancies. Studies have shown that the higher the level of social support received during pregnancy, the higher the likelihood of the pregnant woman not to take drugs (Olaleke, 2010). In the African culture, women receive more social support during their first pregnancy experience compared with other pregnancy experiences. It appears that such people are interested in the successful outcome of the first pregnancy following marriage.

Respondents' Knowledge, use and Willingness to pay for ITN

Awareness and knowledge of ITN was high among the respondents with more respondents from free paying ante-natal clinics having a higher ITN knowledge compared with those in free ante-natal clinics. The possible reason may be the clinic health talk and counseling given by the health workers to the pregnant women. During the intervention nets were sold at the private and mission health facilities (fee paying ANC) on cost recovery basis to sustain ITN supplies while at the government owned clinics, nets were neither available nor sold due to the state government policy on free health care. Those who needed the net could not find to buy. Efforts to get the state government act on ITN availability proved abortive as there was confusion concerning the free ITN to women pregnant for the first time in line with the RBM policy.

Despite the high knowledge, there was low prevalence of ITN use. Pregnant women from the fee paying ante-natal clinic bought nets more than those from the free ANC as the cost of nets was added to the medical bills which made it even

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difficult for the women to know the actual cost. User fees have been found to be responsible for poor uptake coverage of S-P during routine ANC visits in Ibadan (Laeven, 2002).

Though the knowledge of the benefits of ITNs use was low, those with high knowledge of benefits of ITN was of importance as many respondents were more than ever willing to pay for ITN for future pregnancies. Future intention to use ITN was more among women of first pregnancies in the fee paying ANC's private and residing in the transitional areas with well planned houses and with good infrastructures. These findings have been reported elsewhere. Ayodele, Sunt and Holtz et al. 2001 reported more knowledge and use in the urban than rural dwellings.

It has been identified that knowledge of the benefits of ITN use is usually high in areas where ITN vertical programmes are invoked (Desmond et al. 2007).

Identified Barriers to Access IPT (S-P) and ITN

One of the common barriers identified by the respondents from the fee paying antenatal clinics to accessing IPT (S-P) and ITN in the areas of the study include cost. Cost is a crucial issue in terms of accessing the intervention and sustainability. In a study in Kenya where user fees was charged on S-P, it was reported that some of the women who took the first dose of S-P (IPT1) did not return for the second dose (IPT2) since they could not afford the cost (Laeven, 2002). In another study, Onwujekwe et al. 2008 reported that cost implications of ITN treatment may influence outcome of people's willingness to buy ITN. Cost is therefore a very important element in project sustainability; and as cost recovery for drugs remains a significant feature of our national health delivery system (Adeniyi et al. 1991). The high cost of IPT products can discourage the women from completing two dosage recommendations which can potentiate drug resistance (Yusuf et al. 2003).

During the time of data collection, S-P was sold to the respondents in the private ANC's and it was available contrary to government owned ANC where the drugs were given free of charge, but shortages were experienced. A study in Malawi, Laeven (2007) reported that low S-P stock led to concentration of health staff on the treatment of symptomatic patients while less attention was paid to IPT. Furthermore, women in the fee paying ANC reported that lack of money was a crucial factor hindering their efforts to access IPT products. This finding supports that of Ayorinde et al. 2002 who reported that people are willing to pay for health technologies but can

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afford neither the full nor the subsidized price. In Oyo state, Nigeria S-P is one of the drugs subsidized by the government at the government owned tertiary health care facilities while at the primary health care managed by the local government it is free.

This not withstanding availability of the drugs in these health care facilities remains one of the crucial challenges to the IPT intervention. Weaver et al (2004) reported that user fees helps with financing of quality improvement and drug availability for treatment. However, it has been reported that introduction of user fees led to decline in outpatient hospital attendance (Waddington and Enyimayew 1990). Another identified barrier was the non-availability of the drugs (S-P) in these antenatal clinics. It has been reported that S-P availability has strong implication for successful implementation of IPT (Ashwood Smith et al 2003). Also, non availability of insecticide treated beds and pre-packaged insecticide for re-treatment have been cited as notable obstacles to the wide spread use of ITN and insecticide re-treatment kits in the northern Ghana (Hanke and Adongo, 2003).

Another factor was misconception that ITN use was only meant for those pregnant women who were sick or under three months of pregnancy which probably influences their choice of alternative methods of prevention over ITN use. This finding suggests that apart from the reduction of cost and wide distribution coverage of ITN, health education messages should address compliance to IPT and misconceptions.

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Implications for health promotion and education

It was observed that majority of the pregnant women reported and registered for ANC at the third trimester i.e. six or seven months of pregnancy age. This implies that they may have been using alternative malaria prevention methods or always hence unable to benefit from health education and counselling usually given during routine ANC visits which should have encouraged expectant mothers on the correct control and management of malaria in pregnancy. Culturally appropriate health education and counselling programme to enable the women adopt IPT use and practice should be designed and implemented. The women can be reached in the places of worship such as churches and mosques, women associations, community based organizations and through Traditional Birth Attendants (TBAs). Trained nurses could provide client/patient education services to these women and group with emphasis on the use of IPT (S-P and ITN).

Social support from husbands and significant others could also be used to influence pregnant women to go for early registration for ante natal care services. Supportive health education and counselling should be provided with emphasis on misconceptions associated with ITN use. The women should also be taught the skills for ITN use. This can best be achieved through role play, demonstrations and return demonstration. Furthermore, peer educators can be trained among the pregnant women in their communities to assist others in their peer group to make informed decision on the use of IPT during pregnancy. There is also the need to provide continuing education and training opportunities for health workers, TBAs and patent medicine vendors on the use of ITN.

Majority of the respondents were unskilled workers usually traders with their husbands being self employed i.e. farmers and vehicle drivers. An educational programme geared towards promoting IPT use among expectant mothers must take into consideration occupational backgrounds of pregnant women and situate ANC clinics in the markets in collaboration with market women associations. This will encourage the reach of more pregnant women and those in the reproductive age. In addition culturally appropriate communication media such as town announcers and cultural dance groups can be used to stress the importance of attending ANC clinics and visiting health workers to get appropriate advice on the use of IPT during pregnancy. Furthermore, church leaders, church health workers and TBAs should be trained on the dangers associated with malaria in pregnancy.

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Group counseling of husbands of pregnant women, father-in-laws and other significant others that influence the decision making of expectant mothers on the use of S-P and IPT should be done. This group of people can best be targeted during forums meeting with well trained nurses and community extension workers. Another method is to target individual counseling at women on formal health care facility visits for ANC meetings or to combine about other ill health. Finally, RHAI programme managers should ensure compliance to RHAI policy which seeks to make IPT freely available to pregnant women especially those pregnant for the first time. Wide distribution of the nets using primary health care centres and ante natal clinics should be encouraged to ease access to the nets and multi media approach should be used to address skills for net use and misconceptions.

Recommendations

The following recommendations have been offered based on the findings of the study.

1. Health education that stresses the dangers of malaria in pregnancy and benefits of chemoprophylaxis in pregnancy should be given to the pregnant women attending both for paying and free ante natal clinics to close the gap in knowledge.

2. Given the non availability of IPT in government ante natal clinics which is at variance with the RHAI policy, there is the need to scale up the distribution of IPT using ante natal clinics, patent medicine vendors as well as community based organizations as entry points for social marketing of the nets to ensure wide distribution coverage.

3. Some women identified their husbands and health workers as the major advisers to use S-P. Therefore, there is the need for public enlightenment programme to be organized using nurses, midwives and community health extension workers for men at community level on the potential benefits of S-P use, stressing early ante natal clinics visitation, compliance to the S-P dosage i.e. IPT1 and IPT2.

Suggestion for Future Research

In conclusion, research evidence has shown that most pregnant women were willing to adopt the use of IPT products in their future pregnancies. However, further research is required to investigate whether willingness to use IPT products in future pregnancies is matched with ability to pay. This has implications for policy decision as cost of cheap anti-malaria drugs is gradually giving way for more costly alternatives.

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APPENDIX I

MAP OF OYO STATE

LOCAL GOVERNMENT MAP
OF OYO STATE

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APPENDIX 1

INSTRUMENT TO ASSESS FACTORS INFLUENCING THE USE OF INTERMITTENT PREVENTIVE TREATMENT (IPT) AMONG PREGNANT WOMEN IN IBT PAYING AND FREE HEALTH FACILITIES IN OYO STATE

Number...../...../

Instructions to interviewer: Please complete the following interview with women who participated in the pilot project for... Intermittent Preventive Treatment of Malaria in Pregnancy. Please feel free to make notes on the form about any additional relevant information.

Interviewer: Please read to him/her to conclude the interview.

My name is ..... I am from ..... I am going to ask you a few questions about prevention of malaria during pregnancy, and about the drug sulphadoxine pyrimethamine (*Fansidar malaria in pregnancy treatment*). Your responses will be kept confidential, and will not be used against you in any way. The information you provide will be used for policy and practice for the control of malaria in pregnancy. Your participation is voluntary, and you may request to stop this interview at any time. The interview itself should not take more than ..... minutes. We thank you for your time and cooperation.

Interviewer: If respondent agrees to participate, please mark this box ☐

Name of LGA:

State:

Social demographic Data:

1. Name of the pregnant woman: ____

2. What is the age of the woman during the period of pregnancy?

3. What is the age of the pregnancy when the first dose of S+P was taken?

4. What is the parity of pregnant woman: 1. First pregnancy?

2. Second pregnancy or more

5. Sex of child:

6. Birth weight of baby: 1. ≥2.5kg 2. <2.5kg

7a. What is your religion?

1. Christian Religion (please specify denomination)----------

2. Islamic Religion (please specify denomination)----------

3. Traditional Religion

4. Others

7b. What is your ethnicity? 1. Others (specify)---

1. Hausa 2. Yoruba 3. Igbo

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Socioeconomic data

8. What is your marital status during the pregnancy?
   1. Currently married
   2. Formerly married
   3. Never married
9. What is the highest level of school attended?
   1. Never attended school
   2. Primary school incomplete
   3. Primary school completed
   4. Secondary school incomplete
   5. Secondary school completed
   6. Higher institution
10. What is your occupation during the last pregnancy?
    (tick more than one box as appropriate)
    1. House wife
    2. Skilled
    3. Unskilled
    4. Student
11a. Were you employed during the last pregnancy? 1. Yes 2. No 3. I don't know
11b. If yes, where?
    1. Self-employed
    2. Employment in civil/public services
    3. Employment in private services
    4. Never employed
12. What is the employment status of your husband?
    1. Self-employed
    2. Employment in civil/public services
    3. Employment in private services
    4. Never employed
    5. Student
13. Does your household have any of the following?
    a) Electricity 1. Yes 2. No
    b) Radio 1. Yes 2. No

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c) Television	1.	Yes	2.	No
d) Telephone	1.	Yes	2.	No
e) Refrigerator	1.	Yes	2.	No
f) Gas cooker	1.	Yes	2.	No
g) An Electric fan	1.	Yes	2.	No
h) An Electric Iron	1.	Yes	2.	No
i) Bicycle/Canoe/Donkey	1.	Yes	2.	No
j) Motorcycle/Engine	1.	Yes	2.	No
k) Car	1.	Yes	2.	No

11. Could you describe the main material for the floor of your home?

a) Natural floor 1. Earth/sand 2. Dung

b) Rudimentary floor 3. Wood/plank 4. Palm/Bamboo

c) Finished floor 5. Parquet/polished floor 6. Vinyl/Asphalt strips

7. Ceramic tiles 8. Cement 9. Carpet 10. Others (Specify)

15. Does any member of your household owning of the following?

a) A bicycle	1. Yes	2. No
b) A motorcycle	1. Yes	2. No
c) A car	1. Yes	2. No
d) A Donkey/Horse/Camel	1. Yes	2. No
e) A canoe/ship	1. Yes	2. No

16. What is the name of the place that you usually live ?

Is that a large, medium, small town or village?

1. Large town 2. Medium town 3. Small town 4. Village

Knowledge & Perception of malaria data

17. What do you think causes malaria?

18. Give at least three signs/ symptoms of malaria?

19a. Mention at least three consequences (dangers) of malaria in pregnancy to the pregnant woman?

a.

b.

c.

19b Mention at least three consequences (dangers) of malaria in pregnancy to the unborn baby?

a.

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b.

c.

20. Can malaria be prevented? 1. Yes 2. No (go to no. 22) 3. I don't know

21. If yes, in your home, what measures are you using to prevent malaria?

22a. Have you ever had malaria fever during any of your pregnancy experiences?
1. Yes 2. No 3. I don't know

22b. If no, why?-----

23a. Have you ever heard of Intermittent Preventive Treatment of malaria in pregnancy (IPT) using a drug called Fansidar or Alaknech or Amalar? 1. Yes 2. No 3. I don't know

23b. Have you used Fansidar or Alaknech or Amalar to prevent Malaria during your pregnancy?
1. Yes 2. No 3. I don't know

23c. If no, why? (give reasons) -----

24. Have you ever heard of Insecticide Treated Bed nets (ITN) which can be used to prevent mosquito bites during pregnancy? 1. Yes 2. No 3. I don't know

25a. Have you used ITN during pregnancy to prevent mosquito bite?
1. Yes 2. No 3. I don't know

25b. If no, why (give reasons) -----

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Perception on vulnerability & seriousness of malaria

		Strongly Agreed	Agreed	Disagreed	Strongly Disagreed	
26	I am more vulnerable to malaria during pregnancy than a non-pregnant woman					
27	Since malaria signs/symptoms are similar to signs/symptoms of early pregnancy, women who suspect that they are pregnant should confirm their pregnancy status before treating malaria					
28	Malaria is a dangerous disease to the health of pregnant women					
29	Malaria in pregnancy is dangerous to the survival of the unborn child					
30a	The use of intermittent preventive treatment (IPT) with sulphadoxine pyrimethamine (SP) is beneficial in Malarious or Anaemia reduces the chances of pregnant women having malaria fever					
30b	The use of insecticide treated net during pregnancy is dangerous to the health of the pregnant woman"					

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		Strongly Agreed	Agreed	Disagreed	Strongly Disagreed
31	Taking anti-malaria prophylaxis drugs (SP) particular or Fansidar or Coartem or Amatar during this last pregnancy has led to a reduction in the number of times that I experienced malaria fever compared with the previous pregnancy in which I did not use the drug				
32	The use of ITN during pregnancy poses danger to the health of the unborn baby?				

33 How many episodes of malaria did you suffer from during this last pregnancy?----------

34a How many doses of Sulphadoxine pyrimethamine (SP) (Fansidar/Maloricch/Amatar) group of drugs did you take during this pregnancy? (IPT1) (IPT2)

34b Where did you obtain the SP (Fansidar/Maloricch/Amatar) pumps or drugs that you swallowed? i.e. for:

IPT 1
IPT 2

1. Maternity home/clinic 2. Primary Health Care Center
3. Hospital 4. Others (specify)

34c. Where did you swallow the drugs? i.e IPT 1
IPT 2

1. Maternity home/clinic 2. Primary Health care center
3. Hospital 4. Others (specify)

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34d. What type of facility? i.e. for IPT 1
IPT 2

1. Government/public
2. NGO/Mission
3. Private
4. Others (specify)

34e What are the problems if any you experienced with regards to taking the drugs?

35a. Where did you obtain the ITN that you used during this last pregnancy?

1. Maternity home/clinic
2. Primary Health Care Center
3. Hospital
4. Others (Specify)

35b. What type of facility?

1. Government /public
2. NGO/Mission
3. Private
4. Others (Specify)

36a. In your opinion, to what extent is ITN useful in protecting you from mosquito bites during this last pregnancy?

1. Very useful
2. Somewhat useful
3. Not useful
4. Not useful at all
5. I don't know

Cost and willingness to pay

36b. Did you pay for the S-P i.e. fansidar/Amalariech/Amalar?

1. Yes 2. No (if no go to 42) 3. I don't know

36c. How much did you pay for one dose of S-P i.e. fansidar/amalariech/amalar?

37. How many doses of S-P i.e. fansidar/amalariech/amalar did you pay for?

38a If one dose, was it difficult for you to pay for the 1st dose of S-P?

1. Yes 2. No 3. I don't know

38b If yes, how (give reasons) ----------

39a If two doses, was it difficult for you to pay for the 2nd dose of S-P?

1. Yes 2. No 3. I don't know

39b If yes, how (give reasons) ----------

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40. In your opinion, what price do you consider appropriate for one dose of S-P?

41a. Will you be prepared to pay for one dose of S-P at this cost during your next pregnancy?

1. Yes 2. No 3. I don't know

41b. If no, why (give reasons) _____

42a. Would you be willing to pay for S-P during your next pregnancy?

1. Yes 2. No 3. I don't know

42b. If yes, why (give reasons) _____

42c. If no, why (give reasons) _____

43a. Did you pay for insecticide treated bed net during this last pregnancy?

1. Yes 2. No (if no go to 45) 3. I don't know

43b. How much did you pay for one kit of ITN?

43c. Was it difficult for you to pay for the ITN?

1. Yes 2. No 3. I don't know

43d. If yes, how (give reasons) _____

44a. In your opinion, what price do you consider appropriate for one kit of ITN?

44b. Will you be prepared to pay for one kit of ITN at this cost during your next pregnancy?

1. Yes 2. No 3. I don't know

45. Would you like/intend to purchase ITN during your next pregnancy?

1. Yes 2. No 3. I don't know

Significant others and cues for action

46a. Was any one against your taking S-P?

1. Yes 2. No 3. I don't know

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46b. If yes, who was this person against your taking S-P? (please provide no as may be selected from the key given below)

47a. Did any one prompt/encourage you to take S-P?

1. Yes 2. No (if no go to 51a) 3. I don't know

47b. If yes, who was this person that prompt/encouraged you take S-P?
(please provide no. as may be selected from the key given below)

48a. Without this person would you have taken S-P?

1. Yes 2-No 3. I don't know

48b. If yes, why?

48c. If no, why?

49. Will you take S-P during your next pregnancy without being prompted to do so?

50a. Was any one against you sleeping under the LLN?

1. Yes 2. No 3. I don't know

50b. If yes, who was this person against your sleeping under the LLN? (please provide no. as may be selected from the key given below)

51a. Did any one prompt/encourage you to sleep under the LLN?

1. Yes 2. No 3. I don't know

51b. If yes, who was this person that prompted/encouraged you to sleep under the LLN? (please provide no. as may be selected from the key given below)

52. Without this person would you have slept under the LLN?

1. Yes 2. No 3. I don't know

53a. Will you continue to sleep under the LLN in your next pregnancy without being prompted to do so?
1. Yes 2. No 3. I don't know

53b. If yes, why? (give reasons) ----------

53c. If no, why? (give reasons) ----------

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Key to questions 17a-52a

1. Husband
3. Parents
5. Any
2. Mother-in-law
4. Health worker
other (specify)

Probe on re-treatment of bed nets after six months

51. How long have you bought your LLN? (please specify no of months ago)

55. Since you bought the net, have you re-treated it?
1. Yes 2. No 3. I don't know

56. If No, why?

(go to 61)

57. If yes, why?

58a. Where did you re-treat your bed net?

1. Maternity home clinic 2. Primary Health Care Center
3. Hospital 4. Others (Specify)

58b. What type of facility?

1. Government public 2. NGO/Mission
3. Private 4. Others(specify)

59. How many times have you treated your bed net? (please specify no of times)

60. When was the last time you treated your bed net? (please give answers in weeks)

61a. Did anybody prompt you to re-treat your bed net the last time you treated your net?

1. Yes 2. No 3. I don't know

61b. If yes, who is this person(s) you?

1. Husband 2. Mother-in-Law 3. Parents
4. Health worker 5. Any others (please specify) –

62. Will you be able to re-treat your bed net the next time without this person prompting you?

1. Yes 2. No 3. I don't know

63. *Thank you very much for participating and sparing us your time.*

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