MALARIA TREATMENT SEEKING BEHAVIOUR AND

CORRELATES AMONG PREGNANT WOMEN IN ONDO

WEST LOCAL GOVERNMENT AREA

BY

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CERTIFICATION

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DEDICATION

This research work is dedicated to my GOD, the only wise one. Also to my loved ones and to the good people of Ondo kingdom who made this possible.

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All glory, honour and adoration to God almighty, who has been the source of my strength and knowledge through the course of this project.

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ABSTRACT

Pregnant women are vulnerable to malaria as pregnancy reduces a woman's immunity to malaria, making her more susceptible to infection and increasing risk of severe anaemia and death especially in first pregnancy. Delay in diagnosis and treatment of malaria increases morbidity and mortality among pregnant women. Several factors and knowledge about the causation of disease and its curability have direct correlation with the treatment seeking behaviour of the people. This study was aimed at identify factors associated with different malaria treatment behaviours among pregnant women and explore these factors to gain information to guide the planning of preventive strategies and treatment of malaria among pregnant women in Ondo West LGA.

A descriptive cross-sectional study was conducted among 240 pregnant women who presented with signs and symptoms of malaria. The 44 health institutions in Ondo West LGA with malaria laboratory facilities were stratified into government and private, out of which 2 government hospitals and 2 private health centres were randomly selected. Thereafter, 240 women who presented with signs and symptoms of malaria were selected through purposive sampling method and recruited consecutively across the four selected ANC centres. A set of interviewer-administered, semi-structured questionnaire was used to collect data on socio-demographic characteristics, knowledge, practices, and major influencing factors of treatment seeking behaviours for the study. Knowledge of malaria was assessed on a scale of 100 points with scores ≥ 75 rated as high level knowledge while score of 50-74 as average knowledge. Descriptive statistics (frequencies) were used to tabulate and describe the data. For inferential statistics, logistic regression was used at 5% level of significance.

The mean age of the respondents was 22 ± 1.1. One hundred and eighty three (76.3%) had high knowledge of malaria transmission, symptoms, and prevention, despite this; only 100 (41.7%) sought early malaria treatment. The most visited place for malaria treatment was health centres/clinics. Pregnant women with high level of malaria knowledge were 4.55 times more likely than those with average knowledge to seek for early malaria treatment (OR= 4.55, C.I= 2.17-9.55). Those with no formal education were 99.7% less likely than those with post tertiary education to seek early malaria treatment (OR= 0.003, C.I= 0.00-0.07). Also, those who have

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only primary education were 96% less likely than those with post tertiary education to seek for early malaria treatment (OR= 0.04, C.I= 0.05-0.30). The pregnant women within age group of 18-24 years were 82% less likely than those of 35 years and above to seek for early malaria treatment (OR= 0.18,C.I= 0.04-0.84). Pregnant women who made health centres/clinic as their first point of seeking treatment were 44.2 times more likely than those who use local herb to seek for early malaria treatment (OR= 44.2, C.I= 11.6-55.4).

In conclusion, whereas the knowledge of pregnant women about malaria cause, transmission, signs and symptom was good, most of the pregnant women still sought late for malaria treatment. It was noticed from the result that level of education, age, religion, level of knowledge and first place of seeking treatment all have significant relationships with treatment seeking behavior. Therefore it is recommended to improve the dissemination of appropriate information on malaria in Ondo West LGA through active education campaigns to encourage early treatment seeking behavior and utilization of health centres especially among younger women and uneducated pregnant women in Ondo West LGA.

Keywords: Treatment seeking behaviours, Malaria knowledge, Pregnant women.

Word count: 487

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LIST OF ABBREVIATIONS

An   -   Anopheles

ANC   -   Antenatal Care

CDC   -   Centres for Disease Control and Prevention

CMS   -   Commercial Market Strategies

FGD   -   Focus Group Discussion

FMoH   -   Federal Ministry of Health

GDP   -   Gross Domestic Product

IDI   -   In-depth Interview

ITNs   -   Insecticide Treated Nets

KAP   -   Knowledge Attitude and Practice

KII   -   Key Informant Interview

LBW   -   Low Birth Weight

NAMTP   -   National Antimalaria Treatment Policy

NGDTM   -   National Guidelines on Treatment and Diagnosis of Malaria

RDT   -   Rapid Diagnostic Test

RBM   -   Roll Back Malaria

SPSS   -   Statistical Package for Social Science

UNDP   -   United Nations Development Programme

UNICEF   -   United Nations Children's Fund

WHO   -   World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 What Is Malaria?

Malaria is a life-threatening parasitic disease transmitted mostly by female Anopheles mosquitoes and caused by different species of *Plasmodium* parasites. Human malaria is caused by *Plasmodium vivax, P. ovale, P. malariae and P. falciparum* (Ahmed *et al*, 2009). Of these, the latter is the most frequent cause of severe malaria, including cerebral malaria. Malaria is the commonest cause of hospital attendance in all age groups in all parts of Nigeria. It is also one of the four commonest causes of childhood mortality in the country, the other three being acute respiratory infection (pneumonia), diarrhoea and measles (FMoH, 2005). Malaria has severe negative effects on maternal health and birth outcomes. It causes maternal anaemia, increases miscarriage and low birth weight.

P. falciparum is the most predominant parasite specie accounting for about 98% of malaria cases in the country. *P. malariae* usually occurs as a mixed infection with *P. falciparum. Anopheles gambiae* is the main vector of malaria in Nigeria, but *An. funestus* and *An. arabiensis* are also commonly encountered. *An. melas* is found in the coastal areas.

The malaria parasite enters the human host when an infected Anopheles mosquito takes a blood meal. Inside the human host, the parasite undergoes a series of changes as part of its complex life-cycle. Its various stages allow plasmodia to evade the immune system, infect the liver and red blood cells, and finally develop into a form that is able to infect a mosquito again when it bites an infected person. Inside the mosquito, the parasite matures until it reaches the sexual stage where it can again infect a human host when the mosquito takes her next blood meal, 10 to 14 or more days later.

Malaria symptoms appear about 9 to 14 days after the infectious mosquito bite, although this varies with different plasmodium species. Typically, malaria produces fever, headache, vomiting and other flu-like symptoms. If drugs are not available for treatment or the parasites are resistant to them, the infection can progress rapidly to become life-threatening. Malaria can kill by

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infecting and destroying red blood cells (anaemia) and by clogging the capillaries that carry blood to the brain (cerebral malaria) or other vital organs.

1.1.2 Epidemiology of Malaria

Malaria continues to be a leading cause of morbidity and mortality in many tropical regions of the world, despite global efforts to eradicate the disease. While the disease is easily preventable, curable and treatable, it remains a big health threat to many communities the world over, most especially in sub-Saharan Africa (Ahmed *et al*, 2009).

Malaria is characterized by a stable, perennial, transmission in all parts of the country. sxTransmission is higher in the wet season than in the dry season. This seasonal difference is more striking in the northern part of the country (Okrah *et al.*, 2002).

The pregnant women are at greater risk of malaria infection and of symptomatic malaria disease than non-pregnant adults. According to Lindsay et al. pregnant women are more attractive to mosquitoes and the malaria-parasite densities are also higher in them Chukwuocha *et al.*, 2012).

Malaria is an important parasitic disease estimated to affect 100 to 300 million people globally and 1.5-2.7 million people die of it yearly. Each year, 25-30 million women become pregnant in malaria endemic area of Africa, and similar numbers are exposed to malaria in Asia, Oceania, and South America (Arora, 2005). According to Nigeria's Federal Ministry of Health (FMoH, 2011), malaria is associated with 11.0% of all maternal deaths and 70.5% of morbidity in pregnancy. Malaria has remained a major public health problem in Nigeria; children under the age of five and pregnant women are still the most affected. The mortality in Africa alone exceeds million people per annum (Okrah *et al.*, 2002). For several decades, malaria has been recognized as a serious public health problem in Africa, especially in children. By contrast, less attention has been given to the severe problems posed by malaria occurring in pregnant women. The prevalence of malaria in pregnancy varies considerably in different parts of Africa. In Ile-Ife, Okonofua and Abejide (2001) reported an incidence of 16% *Plasmodium* parasitaemia.

During the past decades, numerous large-scale initiatives have been undertaken with the goal of reducing or eradicating the burden of malaria in the developing world. However, the ambitious

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goals set by these programmes for reducing the burden of malaria in the near future has not been achieved (Getahun 2010).

1.1.3 Malaria among Pregnant Women

Malarial infection during pregnancy is a major public health problem in tropical and subtropical regions throughout the world. In most endemic areas of the world, pregnant women are the main adult risk group for malaria.

The symptoms and complications of malaria during pregnancy differ with the intensity of malaria transmission and thus with the level of immunity the pregnant woman has acquired. While these settings are presented as two distinct epidemiologic conditions, in reality the intensity of transmission and immunity in pregnant women occurs on a continuum, with potentially diverse conditions occurring within a country (Okrah et al., 2002).

Pregnant women resident in areas of low or unstable malaria transmission are at a two-or threefold higher risk of developing severe disease as a result of malaria infection than are non-pregnant adults living in the same area. In these areas maternal death may result either directly from severe malaria or indirectly from malaria-related severe anaemia. In addition, malaria infection of the mother may result in a range of adverse pregnancy outcomes, including spontaneous abortion, neonatal death, and low birth weight (Goodman, 2010).

In areas of high and moderate (stable) malaria transmission, most adult women have developed enough immunity that, even during pregnancy, *P. falciparum* infection does not usually result in fever or other clinical symptoms. In these areas, the principal impact of malaria infection is associated with malaria-related anaemia in the mother and with the presence of parasites in the placenta. The resultant impairment of foetal nutrition contributing to low birth weight is a leading cause of poor infant survival and development (Mwanje, 2013).

1.1.4 Malaria Treatment Seeking Behaviours

Health-seeking behaviour studies acknowledge that health control tools, where they exist, remain greatly under or inadequately used. Understanding human behaviour to treatment is prerequisite to improve health practices. Experts in health interventions and health policy became increasingly aware of human behavioural factors in quality health care provision. In order to

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respond to community perspectives and needs, health systems need to review their strategies, taking into account the findings from behavioural studies. (Mwanje, 2013)

Clinical suspicion is based on fever or history of fever in the last 24 hrs and/or the presence of anaemia, therefore it is important to present early for malaria diagnosis and treatment (FMoH, 2011)

1.2 Problem Statement

Each year, approximately 50 million women living in malaria-endemic countries throughout the world become pregnant. An estimated 10,000 of these women and 200,000 of their infants die as a result of malaria during pregnancy, and severe malarial anaemia contributes to more than half of these deaths (WHO 2007a). Pregnant women and newborn children are the worst sufferer of malaria as these two groups are highly susceptible to malaria infection (Sachs *et al.*, 2011)

Pregnant women are vulnerable to malaria as pregnancy reduces a woman's immunity to malaria, making her more susceptible to infection and increasing risk of severe anaemia and death. For the foetus, maternal malaria increases the risk of spontaneous abortion, stillbirth, premature delivery and low birth weight (WHO 2007b). Again pregnant women are especially prone to severe attacks of malaria, which may cause abortion, premature labour and still birth.

In areas of Africa with stable malaria transmission, *P. falciparum* infection during pregnancy is estimated to cause as many as 10000 maternal deaths each year, 8% to 14% of all low birth weight babies, and 3% to 8% of all infant deaths (Goodman, 2010).

Malaria during pregnancy is estimated to cause between 75 000 and 200 000 infant deaths globally (Miaffo et al., 2004). Malaria is responsible for close to 500 000 women developing severe anaemia and responsible for approximately 350 to 500 million clinical episodes each year (Goesh et al., 2004). Between one and three million deaths may be attributed to malaria, causing it to be classified as one of the most prevalent communicable diseases in the world (Sachs & Melaney, 2011). Malaria is one of the leading contributors to the mortality figures recorded in sub-Saharan Africa (Okpere et al., 2010). On an annual basis, malaria during pregnancy is responsible for 10 000 maternal deaths and 200 000 infant deaths in Africa (Okpere et al., 2010). Malaria during pregnancy causes as many as 10,000 maternal deaths each year, 8-14 percent of

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all low birth weight babies, and 3-8 percent of all infant deaths in certain parts of Africa (WHO 2007b).

In addition, malaria has also more pregnancy related problems like foetal wastage, prematurity, dysmaturity, stillbirth and congenital malaria, jaundice, malnutrition, etc. among children. Again, women with semi-immunity to malaria who live in regions where the disease is endemic are at increased risk for more frequent and severe episode of malaria during pregnancy (Ramharter et al. 2005).

Poor physical access to public health facilities is a recognized impediment to the provision of early treatment in developing countries, especially in sub-Saharan Africa, and, in order to cope, communities have resorted to self-medication through the unregulated private and informal sector (Singh et al. 2005).

1.3 Justification

Malaria infection during pregnancy is a major public health problem in tropical and Subtropical regions throughout the world. Pregnant women are the main adult risk group for malaria. In areas of epidemic or low (unstable) malaria transmission, adult women have not acquired any significant level of immunity and usually become ill when infected with malaria. For pregnant women in these areas the risk of developing severe malaria is 2–3 times higher than that for non-pregnant women living in the same area. Maternal death may result either directly from severe malaria or indirectly from malaria related severe anaemia. In addition, malaria may result in a range of adverse pregnancy outcomes, including low birth weight, spontaneous abortion, and neonatal death (WHO,2007). Ondo state is a malaria-endemic region and the pattern of malaria transmission is unstable, therefore it is important to know how the pregnant women seek for malaria treatment.

It is now widely acknowledged that access to appropriate and effective treatment for malaria should be provided within 24 hours of onset of symptoms. A strategy to provide such access should take into account poor rural populations in malaria-endemic countries who are particularly inadequately served by the health system (WHO, 2008).

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Malaria during pregnancy has been most widely evaluated in Africa south of the Sahara where 90% of the global malaria burden occurs. Delay in diagnosis and treatment of malaria increases morbidity and mortality among pregnant women. Sociocultural beliefs about the causation of disease and its curability have direct correlation with the treatment seeking behaviour of the people. The choice of treatment source has been found to be influenced by accessibility, disease type and severity, patient's gender and parents' educational level (Amaechi et al.,2013). Attitude of users towards health care providers is also an important factor. Patients are more likely to start with self-treatment at home as this practice yields them to minimize expenditure and sufferings in remote areas where transport and health facility are the problem (Ahmed et al, 2009).

Although patterns of health-care seeking behaviour in Africa have been shown to be related to cultural beliefs and the perceived cause of the illness, the choice of treatment is greatly influenced by the access that individuals have to health care (Ramharter et al, 2007). The determinants of treatment-seeking behaviour are the distance to be travelled, the cost of care, care providers' attitudes, time spent at the facilities and the overall availability of the services and medicines (Ramharter et al, 2007). A strategy to enable timely access to treatment will therefore need to address all these issues.

Treatment seeking for febrile children has been well studied, but not much for pregnant women. Self treatment is a common phenomenon in this environment but has implications in pregnant women. ANC attendance is suboptimal and there exist some cultural beliefs and taboos which inform steps taking by pregnant women when ill in pregnancy. There is little on the treatment behavior of pregnant women in Ondo State and they have their peculiarities like other states/tribe in terms care of pregnant women.

The response to most episodes of fever is initially self-treatment, and over 50% of cases rely exclusively on it. Malaria is managed mostly in the home, and by the time they get to the health facilities, on average three or more days would have elapsed since the onset of symptoms therefore leading to late treatment seeking behavior among pregnant women in Ondo state.

This study is aimed at identify factors associated with different malaria treatment behaviours among pregnant women and explore these factors in strategizing for the prevention and treatment of malaria among pregnant women in Ondo West Local Government area.

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1.4 Objectives of the Study

1.4.1 General Objective

To determine the malaria treatment seeking behaviours and associated factors among pregnant women in Ondo West Local Government area, Ondo State

1.4.2 Specific Objectives

1. To assess knowledge of malaria, its prevention and treatment among pregnant women
2. To determine the malaria treatment seeking behaviours among pregnant women
3. To assess the practices of pregnant women towards malaria preventive measures
4. To determine factors that influence malaria treatment seeking behaviours among pregnant women

CHAPTER TWO

LITERATURE REVIEW

2.1 Burden of Malaria in Africa

About 90% of all malaria deaths in the world today occur in Africa south of the Sahara. This is because the majority of infections in Africa are caused by *Plasmodium falciparum*, the most dangerous of the four human malaria parasites. It is also because the most effective malaria vector – the mosquito *Anopheles gambiae* – is the most widespread in Africa and the most difficult to control. An estimated one million people in Africa die from malaria each year and most of these are children under 5 years old (WHO 2007b).

Malaria affects the lives of almost all people living in the area of Africa defined by the southern fringes of the Sahara Desert in the north, and latitude of about 28° in the south (Okpere, 2010). Most people at risk of the disease live in areas of relatively stable malaria transmission – infection is common and occurs with sufficient frequency that some level of immunity develops. A smaller proportion of people live in areas where risk of malaria is more seasonal and less predictable, because of either altitude or rainfall patterns. People living in the peripheral areas north or south of the main endemic area or bordering highland areas are vulnerable to highly seasonal transmission and to malaria epidemics (Adedotun *et al*, 2010).

Malaria is endemic in some of the offshore islands to the west of mainland Africa – Sao Tome and Principe and São Tiago Island of Cape Verde. In the east, malaria is endemic in Madagascar, in the Comoro islands (both the Islamic Federal Republic of the Comoros and the French Territorial Collectivity of Mayotte). The vast majority of malaria deaths occur in Africa, south of the Sahara, where malaria also presents major obstacles to social and economic development (WHO, 2008).

In areas of stable malaria transmission, very young children and pregnant women are the population groups at highest risk for malaria morbidity and mortality. Most children experience their first malaria infections during the first year or two of life, when they have not yet acquired adequate clinical immunity – which makes these early years particularly dangerous. Ninety percent of all malaria deaths in Africa occur in young children. Adult women in areas of stable transmission have a high level of immunity, but this is impaired especially in the first pregnancy, with the result that risk of infection increases (Amaechi *et al.*, 2013).

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Malaria during pregnancy in sub-Saharan Africa was estimated to account for: 400.000 cases of severe anaemia in pregnant women, ~ 35% of preventable low birth weight, ~ 5% of infant mortality (CDC 2004). Malaria kills 1.5 to 2.7 million persons every year and adversely affects another 3.000,000 to 5,000,000, mostly in Africa (WHO 2003a, 2008).

Malaria has been well controlled or eliminated in the five northernmost African countries, Algeria, Egypt, Libyan Arab Jamahiriya, Morocco, and Tunisia. In these countries the disease was caused predominantly by *Plasmodium vivax* and transmitted by mosquitoes that were much easier to control than those in Africa south of the Sahara. Surveillance efforts continue in most of these countries in order to prevent both a reintroduction of malaria parasites to local mosquito populations, and the introduction of other mosquito species that could transmit malaria more efficiently (a particular risk in southern Egypt) (WHO, 2008).

Malaria has been estimated to cost Africa more than US$ 12 billion every year in lost GDP, even though it could be controlled for a fraction of that sum. There are at least 300 million acute cases of malaria each year globally, resulting in more than a million deaths. Around 90% of these deaths occur in Africa, mostly in young children. Malaria is Africa's leading cause of under-five mortality (20%) and constitutes 10% of the continent's overall disease burden. It accounts for 40% of public health expenditure, 40-50% of inpatient admissions, and up to 50% of outpatient visits in areas with high malaria transmission (WHO, 2011).

There are several reasons why Africa bears an overwhelming proportion of the malaria burden. Most malaria infections in Africa south of the Sahara are caused by Plasmodium falciparum, the most severe and life-threatening form of the disease. This region is also home to the most efficient, and therefore deadly, species of the mosquitoes which transmit the disease. Moreover, many countries in Africa lacked the infrastructures and resources necessary to mount sustainable campaigns against malaria and as a result few benefited from historical efforts to eradicate malaria (Erhun *et al.*, 2004).

In Africa today, malaria is understood to be both a disease of poverty and a cause of poverty. Annual economic growth in countries with high malaria transmission has historically been lower than in countries without malaria. Economists believe that malaria is responsible for a growth penalty of up to 1.3% per year in some African countries. When compounded over the years, this penalty leads to substantial differences in GDP between countries with and without malaria and severely restrains the economic growth of the entire region. Malaria also has a direct impact on

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Africa's human resources. Not only does malaria result in lost life and lost productivity due to illness and premature death, but malaria also hampers children's schooling and social development through both absenteeism and permanent neurological and other damage associated with severe episodes of the disease (Goodman *et al*, 2010).

Growing political commitment by African leaders for action on malaria was given a boost by the founding of the Roll Back Malaria global partnership in 1998. Less than two years later African Heads of State and their representatives met in Abuja, Nigeria to translate RBM's goal of halving the malaria burden by 2010 into tangible political action. The Abuja Declaration, signed in April 2000 endorsed a concerted strategy to tackle the problem of malaria across Africa. The Abuja Declaration endorsed RBM's goal and established a series of interim targets for the number of people having access to treatment, protective measures or, in the case of pregnant women, receiving intermittent preventive treatment to ensure that progress would be made towards the goal and malaria-endemic countries and other RBM partners held responsible (FMOH 2011). Considerable progress has been made since Abuja. Almost 20 African countries have reduced or eliminated taxes and tariffs on insecticide-treated nets (ITNs) to make them more affordable.

2.2 Background on Malaria in Nigeria

Malaria is the commonest cause of hospital attendance in all age groups in all parts of Nigeria. It is also one of the four commonest causes of childhood mortality in the country, the other three being acute respiratory infection (pneumonia), diarrhoea and measles. It is estimated that 50% of the population has at least one episode of malaria each year while children under 5 have on the average of 2 – 4 attacks in a year (Ahmed *et al*, 2009). Malaria has severe negative effects on maternal health and birth outcomes. It causes maternal anaemia, increases miscarriage and low birth weight (Obi *et al*, 2012).

P. falciparum is the most predominant parasite specie accounting for about 98% of malaria cases in the country. *P. malariae* usually occurs as a mixed infection with *P. falciparum. Anopheles gambiae* is the main vector of malaria in Nigeria, but An. *funestus* and *An. arabiensis* are also commonly encountered. *An. melas* is found in the coastal areas (Obi *et al*, 2012).

Transmission is higher in the wet season than in the dry season. This seasonal difference is more striking in the northern part of the country.

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Nigeria bears up to 25 percent of the malarial disease burden in Africa, hence contributing significantly to the one million lives lost per year in the region, which mostly consists of children and pregnant women. Malaria in Nigeria is endemic and constitutes a major public health problem despite the curable nature of the disease. Malaria-related deaths account for up to 11 percent of maternal mortality (FMoH, 2011).

Communities' knowledge about malaria has generally improved over time with figures higher in urban areas and in the southern parts of the country as compared to rural areas and some parts of the northern regions of Nigeria (Chukwuocha *et al.*, 2012).

The disease overburdens the already-weakened health system: nearly 110 million clinical cases of malaria are diagnosed each year, and malaria contributes up to 60 percent of outpatient visits and 30 percent of admissions. Malaria also exerts a huge social and economic burden on families, communities, and the country at large, causing an annual loss of about 132 billion Naira2 in payments for treatment and prevention as well as hours not worked (Jimoh et al., 2007).

In line with RBM approach and Abuja Declaration, several factors were reviewed as the major situations of malaria in Nigeria, one of them is that the perception of the cause of malaria is poor and very few people in the community link mosquito to malaria, (FMOH, 2011)

2.3 Malaria in Pregnancy

Malarial infection during pregnancy is a major public health problem in tropical and subtropical regions throughout the world. In most endemic areas of the world, pregnant women are the main adult risk group for malaria. Malaria during pregnancy has been most widely evaluated in Africa south of the Sahara where 90% of the global malaria burden occurs (Bojd *et al.*, 2011). The burden of malaria infection during pregnancy is caused chiefly by *Plasmodium falciparum*, the most common malaria species in Africa. The impact of the other three human malaria parasites (*P. vivax, P. malariae, and P. ovale*) is less clear. Every year at least 30 million pregnancies occur among women in malaria endemic areas of Africa, most of who reside in areas of relatively stable malaria transmission (Okpere, 2010).

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The symptoms and complications of malaria during pregnancy differ with the intensity of malaria transmission and thus with the level of immunity the pregnant woman has acquired. While these settings are presented as two distinct epidemiologic conditions, in reality the intensity of transmission and immunity in pregnant women occurs on a continuum, with potentially diverse conditions occurring within a country (Goodman, 2010).

In areas of epidemic or low (unstable) malaria transmission, adult women have not acquired any significant level of immunity and usually become ill when infected with *P. falciparum* malaria (Erhun *et al*, 2004). Pregnant women resident in areas of low or unstable malaria transmission are at a two-or threefold higher risk of developing severe disease as a result of malaria infection than are non- pregnant adults living in the same area. In these areas maternal death may result either directly from severe malaria or indirectly from malaria-related severe anaemia (Goodman, 2010). In addition, malaria infection of the mother may result in a range of adverse pregnancy outcomes, including spontaneous abortion, neonatal death, and low birth weight (LBW).

In areas of high and moderate (stable) malaria transmission, most adult women have developed enough immunity that, even during pregnancy, *P. falciparum* infection does not usually result in fever or other clinical symptoms. In these areas, the principal impact of malaria infection is associated with malaria-related anaemia in the mother and with the presence of parasites in the placenta. The resultant impairment of foetal nutrition contributing to low birth weight is a leading cause of poor infant survival and development. However, clinical suspicion is based on fever or history of fever in the last 24 hrs and/or the presence of anaemia (NGDTM, 2011).

In areas of Africa with stable malaria transmission, *P. falciparum* infection during pregnancy is estimated to cause as many as 10000 maternal deaths each year, 8% to 14% of all low birth weight babies, and 3% to 8% of all infant deaths (Mwanje, 2013).

2.4 Burden of Malaria in Pregnancy

Tens of millions of pregnant women living in endemic regions become pregnant each year. Pregnancy reduces immunity to malaria, increasing the risk of infection, severe illness, and death for the woman; other adverse outcomes include spontaneous abortion, stillbirth, low birth weight, and neonatal death (Ahmed *et al*, 2009)

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Maternal mortality is twice in pregnant malaria women than among non-pregnant patients with severe malaria (Iwueze *et al.*, 2013). Anaemia is the most common symptom of malaria in pregnancy and usually develops during the second trimester (Iwueze *et al.*, 2013). Cerebral malaria is rare in adults except during pregnancy and is responsible for many maternal malaria deaths (Jimoh *et al.*, 2007)

Each year, 25-30 million women become pregnant in malaria endemic area of Africa, and similar numbers are exposed to malaria in Asia, Oceania, and South America (Mwanje, 2013). According to Nigeria's Federal Ministry of Health, malaria is associated with 11.0% of all maternal deaths and 70.5% of morbidity in pregnancy.

There are an estimated 100 million malaria cases with over 300,000 deaths per year in Nigeria. Malaria due to *Plasmodium falciparum* in pregnancy is an important and major contributing factor to the high maternal morbidity and mortality in sub-Saharan African (Mwanje, 2013) and about 47% of pregnant women are diagnosed with malaria in Nigeria.

2.5 Roll Back Malaria Initiative

The Roll Back Malaria summit in 2000 brought new urgency to the efforts to eliminate malaria in sub Saharan Africa. To date, more than half of the malaria endemic countries have established country specific strategic plans and guidelines for effective prevention and treatment of malaria in pregnancy.

RBM is an initiative to improve malaria control in the context of health sector reform. It was initiated in 1998 through a joint partnership of WHO, UNICEF, UNDP and the World Bank. RBM consists of two phases - the inception phase and the implementation phase. After the Consensus Building Meeting for countries in West Africa in March 1999, Nigeria started the RBM inception phase.

Despite the toll that malaria exacts on pregnant women and their infants, until recently this was a relatively neglected problem, with less than 5% of pregnant women having access to effective interventions. The promising news is that during the past decade potentially more effective strategies for the prevention and control of malaria in pregnancy have been developed and demonstrated to have a remarkable impact on improving the health of mothers and infants. Malaria prevention and control during pregnancy has a three-pronged approach:

1. intermittent preventive treatment;

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2. insecticide-treated nets; and

3. case management of malaria illness.

The fact that in most African countries, over 70% of pregnant women make multiple antenatal clinic visits provides a major opportunity for prevention of malaria, along with other priority diseases affecting pregnant women.

The strategy for the implementation of the national malarial treatment policy is that of Roll Back Malaria (RBM). This strategy seeks to establish a social movement in which the local communities, public and private sectors, all tiers of government and non-governmental development agencies etc come together in a partnership and network to implement malaria control interventions (FMoH, 2005). Roll Back Malaria is a global initiative that has set specific deadlines for the attainment of explicitly defined milestones. One of these is the reduction of malaria burden everywhere by 50% by the year 2010.

The RBM intervention strategy has four key elements (WHO, 2010):

i. Patients with malaria should have access to appropriate and adequate treatment within 24 hours of the onset of symptoms

ii. Pregnant women particularly in their 1st and 2nd pregnancies should have access to effective antimalarial prophylaxis and treatment

iii. Insecticide treated nets and other materials should be available and accessible to persons at risk of malaria particularly pregnant women and children under 5 years of age.

iv. Epidemics of malaria should be recognised and steps initiated for their containment within one week of their onset.

2.5.1 Recommended interventions for malaria prevention and control during pregnancy

Policies for malaria prevention and control during pregnancy in areas of stable transmission emphasize a package of intermittent preventive treatment and use of insecticide-treated nets and ensure effective case management of illness and anaemia. Insecticide-treated nets and prompt effective case management are recommended for all pregnant women living in malarious areas (WHO, 2010).

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Intermittent preventive treatment

All pregnant women in areas of stable (high) malaria transmission should receive at least two doses of intermittent preventive treatment after quickening, the first noted movement of the fetus (WHO, 2007). WHO recommends a schedule of four antenatal clinic visits, with three visits after quickening. Intermittent preventive treatment at each scheduled visit after quickening will ensure that a high proportion of women receive at least two doses. Doses should not be given more frequently than monthly.

Insecticide-treated nets

Insecticide-treated nets should be provided as early in pregnancy as possible to all pregnant women living in malarious areas, including epidemic and disaster situations, according to the perceived need in the locality. Their use should be encouraged for women throughout pregnancy and postpartum. Nets can be provided in the antenatal clinic or through other sources in the private and public sectors (NGDTM, 2011).

2.6 Risk Factors for Malaria in Pregnancy

Delay in diagnosis and treatment of malaria increases morbidity and mortality both in the community and specifically pregnant women (Yadaw, 2010). There are several factors which are responsible everywhere for this disease, particularly in rural communities. Sociocultural beliefs about the causation of disease and its curability have direct correlation with the treatment seeking behaviour of the people (Oberlander, 2000). The choice of treatment source was found to be influenced by accessibility, disease type and severity, patient's gender and parents' educational level (Obi *et al.*, 2012). Attitude of users towards health care providers is also an important factor. Patients are more likely to start with self-treatment at home as this practice yields them to minimize expenditure and sufferings in remote areas where transport and health facility are the problem (Okpere *et al.*, 2010).

2.7 Treatment Seeking Behaviours

A review of research of care seeking practices indicates that treatment patterns appear to be in a hierarchy with the first and commonest type of treatment being offered at home, the second stage at a health facility and the third stage/level of treatment consisting of care from hospitals and health units with admission facilities. A number of studies have highlighted the fact that most families in Nigeria believe in the home treatment of malaria. Reasons given for this practice

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include the following; lack of adequate finance for formal medical consultation and treatment; long distance from health facility; availability of home stocked drugs and herbs; convenience of home treatment for most caretakers (who are most often women); ease of use of traditional herbs, and support of treatment offered by other household members (Ramharter *et al.*, 2007). At the home level of treatment, patients were mostly given common anti-malarials, followed by analgesics (paracetamol and aspirin), concurrently with herbs and sometimes-other antibiotics (Okpere *et al.*, 2010). The use of combination therapy at home level of treatment is still low (Ahmed *et al*, 2009).

2.8 Factors Influencing Various Malaria Treatment Seeking Behaviours among Pregnant Women

Generally, in all studies about health care seeking practices, there is a high level of preference for home treatment outside of the formal health system, as first level of treatment (Bojd *et al*, 2011). A review of research of care seeking practices indicates that treatment patterns appear to be in a hierarchy with the first and commonest type of treatment being offered at home, the second stage at a health facility and the third stage/level of treatment consisting of care from hospitals and health units with admission facilities (Denise *et al.*, 2003).

Poor people are at increased risk both of becoming infected with malaria and of having this more frequently. Child mortality rates are known to be higher in poorer households and malaria is responsible for a substantial proportion of their deaths. Poor families live in dwellings that offer little protection against mosquitoes and are less able to afford possessing insecticide-treated nets. Within man- made malaria, excluding the migration of non-immunes to endemic areas, the most important impacts on transmission are probably brought about by water resource development and land use change. Human modification to the environment also can create larval development sites and malaria (Sachs *et al.*, 2011). Micro-environments may exist for malaria with heterogeneous incidence within small geographic areas. This may especially be true for man-made malaria in which man by his farming activity or any other activity may create the environments which suit mosquito breeding and protective measures may be widely distributed. The identification of predictors of malaria incidence could provide a useful means of identifying targets for intervention of manmade malaria (Yadav, 2010).

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Proven effective options to reduce malaria morbidity and mortality include early diagnosis combined with prompt, effective therapy. This is complemented by malaria prevention through reduction of human–vector contact, emphasizing the use of insecticide-treated nets (ITNs). Surveys in Africa revealed that 80–90% of presumed malaria cases (pregnant women) were treated at home (Thera et al. 2000; Fawole & Onadeko 2001; Nyamongo 2002). Frequently formal health care is sought only if initial treatment fails (Denise et al., 2003). Households' behaviour in response to signs of disease is influenced by several factors including: knowledge, attitudes and practices (KAP) towards malaria; accessibility and availability of health services; socio-economic factors, and perceptions of severity of the illness (Singh et al, 2005). Understanding the communities' perceptions (particularly the household's head) of cause, symptoms identification, and treatment of malaria is an important step towards developing strategies aimed at controlling the disease.

The knowledge of malaria is strongly associated with the level of formal education. This can be explained by the fact that those who have attained at least secondary level of education might have been taught lessons on malaria in school, and are also more likely to read and comprehend malaria messages on tracts, radio or television (Bojd et al, 2011).

Education remains a powerful tool that empowers people to enable them make decisions for themselves and influence their families. Education clearly influences knowledge about modes of malaria transmission. Educated communities also have multiple sources of information when compared with their uneducated counterparts (Erhun et al., 2004; Adedotun et al., 2010). Hanafi Bojd et al., 2011 also found a significant correlation between the education level of respondents and their interest in participating in malaria control programs as volunteers in Iran. They also were of the opinion that an increasing trend in literacy is a protective factor for malaria morbidity.

Malaria places a huge financial burden on pregnant women. As much as N7 000 (USD45.45) is spent on treatment alone and at least N3 000 (USD19.48) each one month they have malaria (Chukwuocha et al., 2012). These are monies that could be used to adequately feed the family, pay for children's school fees, clothings or other things. Therefore the disease also indirectly affects effective running of the family. Treatment costs of malaria were reported to be higher among urban respondents than the rural respondents (Bojd et al., 2011). In a study done in the northern district established the average cost of treatment of one episode of malaria at USD 1.10.

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The factors that influence the choice of source of treatment/drugs for consumers are: distance to the source of drugs, expectations of low cost of drugs at particular source, advice from friends and relatives, history of relationship with drug source (e.g., rate of successful treatment with drugs procured from that source), the presence of a good provider at the source, quick service, steady availability of drugs and sometimes, the presence of qualified providers. (Okpere et al., 2010)

There was a report by Chukwuocha (2012) where infected persons attributed their preference of patent medicine stores to hospitals, arose from undue delay, unending protocols and bottleneck in hospitals before seeing the doctor. And since they were always in a hurry, would prefer the quickest and easiest way which they say was quite effective and reliable, thus only a few visited the hospital (5.98%).

Other factors that influence the malaria treatment seeking behaviours among pregnant women vary from: general poverty among some caregivers to periodic stock outs of recommended drug therapy especially at public health facilities. Sometimes, people fear going to hospitals (if referred) because of poverty and the fact that if they are admitted, they will need bed sheets, blankets, cups etc. which they do not have at home, and so they decide to stay at home (Kalisa 1997). This often results in a delay in treatment or a resort to traditional medicine.

Also, the lack of finance at time of recognizing illness, long distance to health unit, and lack of knowledge about malaria drugs lead to self medication and most likely poor drug use (Bakika, 2004).

2.9 Knowledge, Attitudes and Control Practices of Malaria among Pregnant Women

Findings have shown that good knowledge, attitude and practices of any public health disease by individuals and communities seems necessary if effective treatment and preventive measures are to be realistic (Iwueze et al., 2013). Human behavior affects health promoting and disease preventing activities, increasing risk in some instances and in others reducing it (Erhun et al., 2004). Understanding people's perceptions of malaria and the factors which influence this perception must be a central part of mounting successful interventions to the control of malaria throughout the world (Yadav, 2010). Malaria related knowledge, attitudes and preventive practices (MKAP) have been examined in many rural and urban multiethnic populations in Nigeria (Tsuyuoka et al., 2001; Dossou-Yov et al., 2001; Okrah et al., 2002; Erhun et al., 2004). Within Nigeria, surveys of residents of the Atlantic coast revealed a lack of knowledge and many

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misconceptions about the transmission and treatment of malaria, which could adversely affect malaria control measures and antimalarial therapy (Sachs *et al.*, 2011). MKAP is thus becoming more important to the design and improvement of malaria control activities, to the establishment of epidemiological and behavioral baselines and to identifying indicators to monitoring intervention programs (Ahmed et al., 2009).

Understanding the local perceptions of malaria and its influence on health seeking behaviour from individual's point of view is critical and relevant to the development of health education messages that increase community awareness of the problem as well as the importance of early diagnosis and prompt treatment of malaria.

Socioeconomic conditions of the community have direct bearing on the problem of malaria. Ignorance and impoverished conditions of people contribute in creating source and spread of malaria and hinder disease control strategy (Yadav *et al.*, 2009). Prevention of the disease through better knowledge and awareness is the appropriate way to keep it away. And people remain healthy, as illness confusion and health-seeking behaviour may enhance or interfere with the effectiveness of control measures. Studies pertaining to knowledge, attitude and practices (KAP) showed that direct interaction with community, plays an important role in circumventing malaria problem (Singh *et al.*, 2005).

In a study by Amaechi et al in 2013, it was shown that majority of the respondents which were pregnant women (97.01 %) attributed the cause of malaria to the bites of mosquitoes. although they could not really say what pathogen in the mosquito bites that led to the cause of malaria. They also reported that a good number of the respondents had the knowledge that mosquito breeds in stagnant water but could not really explain the life cycle of the vector. More than half of the respondents (56.77%) got their information about malaria through the radio. Most of the respondents (95.61%) were familiar with the signs and symptoms associated with malaria.

Findings by Chukwuocha et al., 2012 revealed that most of the respondents agreed that the presence of stagnant water, overgrown weeds/bushes, late night outdoor activities and absence of mosquito nets (ITNs) predisposed them to the disease. Similarly, environmental and host factors have previously been implicated in the incidence of the disease (Chukwuocha, 2012). Introduction of electricity in rural areas had also been observed to promote late night, outdoor human activities and this has increased biting opportunity for mosquitoes (Lucas, 2007).

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CHAPTER THREE

METHODOLOGY

3.1 Study Location

The study was carried out in Ondo West Local Government area of Ondo state.

Ondo west local government is situated at Lat. 7.1°N and Long. 4.83°E, and 277m elevation above the sea level. The land mass is about 70km^2 and population of 283,673 people.

The climate of Ondo West Local Government is equatorial, notably with dry and wet seasons with relatively high humidity. The wet season lasts from April and ends in October. Average temperature ranges between 25°C and 35°C almost throughout the year.

Ondo West Local Government is bounded on the west by Ile-Oluji/Okeigbo local government, on the east by Idanre and Ondo East Local government, on the north by Akure South local government and on the south by Odigbo local government.

The local government consists of multi-ethnic nationalities predominantly the Yorubas, Igbos, Edos, Urhobos, Itsekiris, Ijaws, Hausas, Fulanis and foreigners who are from Europe, Asia and other parts of the world. The main occupation of the pregnant women in the local government is trading. However some also engage in agriculture.

The basic social amenities in Ondo west include electricity, good roads linking major cities, good drinking water. Also health facilities and education system are known to be peculiar in this area.

The mass media in Ondo west local government has not been well developed to the utmost standard, as only one radio station (annex) is located in the area. But there are good coverage, reception and distribution of other forms of mass media like the state-owned television and radio (OSRC), Hope Newspaper among others.

The Local Government Area also houses several health care centers such as the Mother and Child Hospital, Ondo state specialist hospital, Comprehensive health centres and several Maternity Centres. These are facilities for maximum antenatal care and clinics for pregnant women in the health institutions across the local government.

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There are 62 registered completed and functioning health facilities in the local government, comprising of state owned and private health institutions (Ondo State Ministry of Health, 2010). There are 44 health institutions across the local government with laboratory facilities for diagnosis of malaria. The Antenatal clinics are runned twice in a week, and the activities include: health education, distribution of ITNs, administration of drugs.

3.2 Study Design

This study was a hospital-based descriptive cross-sectional study designed to determine the treatment seeking behaviours and associated factors among pregnant women in Ondo West Local Government area in Ondo state

3.3 Study Population

The study population consisted of pregnant women who presented for diagnosis and treatment after symptoms of fever and raised body temperature and have been confirmed to have malaria by laboratory diagnosis- Rapid Diagnostic Test (RDT) and microscopy of malaria parasites.

3.3.1 Inclusion criteria

1. All pregnant women presenting for malaria diagnosis and treatment in the selected health facilities.
2. Willingness to participate in the study as evidenced by signing of consent form after explaining nature and reason for study to the pregnant women (participants).

3.3.2 Exclusion criteria

1. Severely ill pregnant women
2. Health institutions without facilities for malaria laboratory diagnosis

3.4 Sample Size

The minimum sample size for this study was obtained using the formula for single proportion (Kish, 1965):

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$nf = \underline{N}$

$\quad 1 + {}^{N}/_{n}$

nf = desired sample size when population < 10,000

n = the estimate of the population size,

Prevalence of malaria among 2848 pregnant women in Ondo is 20.3% (Abejide, 2001).

20.3% of 2848 = 578

N = Derived sample size when population >10,000

$N = \dfrac{Z^2 pq}{d^2}$

Z = the standard normal deviation, usually set at 1.96 which corresponds to 95% confidence level

P = Proportion in the target estimated to have late treatment seeking behavior (24hrs after onset of symptoms). From similar studies conducted in Ibadan, the percentage of pregnant women that presented late for malaria treatment was found to be 55% (Falade, 2011).

q = 1.0 −p

d = degree of accuracy desired usually set at 0.05

Based on the above information,

$N = \dfrac{(1.96) \times 0.55 \times (1-0.55)}{(0.05)^2} = 388.08 \sim 388$

$nf = \dfrac{384}{1 + {}^{384}/_{578}} = 232.15 \sim 232$

A sample size of 240 was used.

3.5 Sampling Technique

Multi-stage sampling technique of three steps was used to select two hundred and forty pregnant women among those presenting for malaria treatment. Out of the 62 registered health institutions, only 44 have facilities for malaria laboratory diagnosis. In the first step, ante-natal centres (that have facilities for malaria laboratory diagnosis) were identified in Ondo West Local Government. In the second stage, four ANC centres were randomly selected from the government and private hospitals. Thereafter, two hundred and forty pregnant women that have presented themselves for malaria treatment were selected through purposive sampling method across the four selected ANC centres.

3.6 Data Collection

A set of interviewer-administered, semi-structured questionnaire was used to collect data for the study (appendix 2). It was pre-tested in two health facilities in Akure South Local Government (non-participatory LGA) in Ondo state. The questionnaire was developed using findings and questions from related earlier studies. It included sections and variables on socio-demographic characteristics, knowledge, reporting practices, and major influencing factors of treatment seeking behaviours.

The interviewer questionnaire consisted the following:

- Socio demographic characteristics like age, level of education, occupation, and ethnicity.
- Basic knowledge about Malaria—This range from sources of basic information, signs and symptoms, transmission as well as the prevention of malaria
- Treatment seeking behaviours (early and late)
- Risk factors of malaria
- Attitudes and risk perception towards risk factors of malaria
- Factors influencing malaria treatment seeking behavior (education, income, accessibility of health facilities, socio-economic status, cultural belief etc.)

3.6.1 Pre-test of the Instrument

The instruments were adequately pre-tested in Akure South LGA in Ondo state, a non-participating LGA. Observed ambiguities were corrected and a preliminary analysis carried out before administering the questionnaire for the main study.

3.7 Data Analysis

3.7.1 Measurement of Outcome Variable (Treatment Seeking Behaviour)

Early Treatment Seeking Behaviour: Any pregnant woman who presented to health facility within 24hours of noticing symptoms (raised body temperature, fever) of malaria is said to have early treatment seeking behavior (National Guidelines for Diagnosis and Treatment of Malaria, 2011).

Late Treatment Seeking Behaviour: Any pregnant woman who presented to health facility after 24hours of noticing symptoms (raised body temperature, fever) of malaria is said to have late treatment seeking behavior (National Guidelines for Diagnosis and Treatment of Malaria, 2011).

3.7.2 Independent (Explanatory) Variables

There are various factors that are associated with malaria treatment seeking behaviours among pregnant women, but those that were emphasized in this study include the following:

- Socio-demographic factors (age, religion, ethnicity etc)
- Education level
- Socio-cultural belief
- Accessibility of health facility
- Socio-economic status (income, job etc)
- Knowledge and awareness (health education, antenatal visit)
- Risk perception

3.7.3 Data Management

Data collected were entered into a data base and analyzed with statistical package for social science (SPSS). Serial number was assigned to each question for easy identification and for

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correct data entry and analysis. A coding guide was developed to code and enter each question into the computer for analysis.

Descriptive statistics (frequencies) were used to tabulate and describe the data. For inferential statistics, logistic regression was used. Bivariate analysis between dependent and independent variables was performed using binary logistic regression.

Finally, information obtained were summarized and presented in tables and charts.

3.7.4 Knowledge grading

Responses to questions on knowledge of malaria on the likert scale were scored 1-5 marks.

Strongly disagreed response was given 1 mark, while disagreed response was assigned 2 marks. Responses that were neutral to the questions asked were given 3 marks, while those that agreed were assigned with 4 marks. Maximum 5 marks were given for all responses that strongly agreed to the questions asked.

Overall scores were placed on percentage to determine the level of malaria knowledge. Respondents who scored above 74% were categorized as those with high level of malaria knowledge, while those who scored between 50-74% were categorized as those with average knowledge of malaria knowledge.

3.8 Ethical Approval

Ethical clearance was obtained from ●ndo State Health Research and Ethical Committee (Appendix 1). The research was at no cost to the subject as the researcher bears the cost.

Written informed consent was obtained from each participant before data collection (Appendix 1). Respondents received a detailed description of the research, confidentiality provisions and the fact that their participation will be voluntary and they would be able to withdraw at any point if they so deemed. The principles of privacy and confidentiality were upheld as the anonymity of the respondents was protected throughout the study.

CHAPTER FOUR
RESULTS

The following section presents the results of this study. An outline of the demographic characteristics of the population, descriptive analysis of the respondents' knowledge, bivariate results as well as a concise summary of the results

4.1 Socio-Demographic Characteristics

Table 1 shows the distribution of age, marital status, religion, level of education and ethnicity of the study population. The total number of respondents studied was 240 pregnant. Out of which 78 (32.5%) of them were in the age category of 18-24 years, with mean Age 22 ± 1.1 of this proportion, while only 41(17.1%) were 35 years and above.

Most of the pregnant women (n= 208, 86.7%) were married, while 7 (2.9%) were divorced. Most of the respondents (n= 190, 79.2%) were Christians and 50 (20.8%) were Muslims.

Just 16 (6.1%) out of the 240 pregnant women had post-tertiary education, while 146 (60.8%) had secondary education.

The highest proportion of the pregnant women (n= 82, 34.2%) were self-employed. Fifty (20.8%) were students, while only 45 (18.8%) works for the government.

Also, 188 (77.9%) out of the 240 respondents were Yorubas. Others included Igbos (n=17, 7.1%), Hausas (n= 17, 7.1%), and other ethnic groups (n= 19, 7.9%)

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Table 1: Socio-Demographic Characteristics of Study Populations (N=240)

Characteristics	Frequency	%
Age group (years)		
18-24	78	32.5
25-29	73	30.4
30-34	48	20.0
35-highest	41	17.1
Marital status		
Married	208	86.7
Unmarried	25	10.4
Divorced/Separated	7	2.9
Occupation		
Self-employed	82	34.2
Student	50	20.8
Government employee	45	18.8
Artisan	26	10.8
Non government	19	7.9
Non paid	18	7.5
Religion		
Christianity	190	79.2
Islam	50	20.8
Level of Education		
No education	17	7.1
Primary	20	8.3
Secondary	146	60.8
Tertiary	41	17.1
Post tertiary	16	6.7
Ethnicity		
Yoruba	187	77.9
Others	19	7.9
Igbo	17	7.1
Hausa	17	7.1

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4.2 Knowledge about Malaria

4.2.1 Assessment of Malaria Knowledge (Transmission)

All the respondents (240) have heard about malaria. Out of the 240 pregnant women, the majority (77.1%) associated malaria with mosquito bites. Others were drinking of contaminated water (14.2%), eating of contaminated food (5.0%), and contact with malaria patients (3.2%) as shown in the table below.

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Table 2: Knowledge about the Transmission of Malaria (N=240)

Malaria Transmission	Frequency	%
Vector		
Mosquito	230	95.8
Rat	6	2.5
Cockroach	4	1.7
Transmission		
Mosquito bite	185	77.1
Eating contaminated food	12	5.0
Contact with person with malaria	9	3.8
Drinking contaminated water	24	10.0
Eating a lot of Mangoes	10	4.1

4.2.2 Knowledge about Signs and Symptoms

Respondents were asked about the signs and symptoms of malaria from pool of various signs and symptoms (correct and incorrect). They indicated awareness of common signs and symptoms (multiple responses) as shown in Table 3. The most frequently mentioned signs and symptoms of malaria included high temperature/fever (n=228, 95%), headache (n= 185, 77.1%), loss of energy (n= 158, 65.8%), vomiting (n= 103, 42.9%), body pains (n= 89, 37.1%), loss of appetite (n= 63, 26.3%) and itching (n= 60, 25%).

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Table 3: Respondents' Knowledge about Malaria Signs and Symptoms. (N=240)

Signs and symptoms	Frequency	%
High temperature/fever		
Yes	228	95.0
No	12	5.0
Loss of Energy		
Yes	158	65.8
No	82	34.2
Vomiting		
Yes	103	42.9
No	137	57.1
Sweating		
Yes	71	29.6
No	169	70.4
Headache		
Yes	185	77.1
No	55	22.9
Body pains		
Yes	89	37.1
No	151	62.9
Itching		
Yes	60	25.0
No	180	75.0
Loss of appetite		
Yes	63	26.3
No	177	73.8
Dizziness		
Yes	153	63.8
No	87	36.3

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4.2.3 Malaria Prevention and Treatment

The vast majority of respondent (n=92.9%) stated the use of insecticide treated mosquito nets is a good way of preventing malaria as shown in Table 4. However, some respondents also mentioned spraying insecticide (n=65.8%), wearing protective clothes (n=45%), cutting bushes (n=29.6%) and making fire and smoke (n=24.6%) as ways of preventing malaria.

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Table 4: Knowledge about Malaria Prevention and Control (N=240)

Malaria prevention and control	Frequency	%
Use of insecticide treated net		
Yes	223	92.9
No	17	7.1
Wearing Protective clothes		
Yes	108	45.0
No	132	55.0
Making fire and smoke with leaves		
Yes	59	24.6
No	181	75.4
Spraying insecticide		
Yes	158	65.8
No	82	34.2
Cutting bushes around the house		
Yes	71	29.6
No	169	70.4
Cleaning dark corners around the house		
Yes	54	22.5
No	186	77.5

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4.2.4 Malaria Knowledge among Respondents

The score of knowledge of malaria by the respondents was assessed by the use of likert scale. Score of 75% and above was adjudged to be a high level of knowledge, while 50-74% was average and below 50% was low level of knowledge. Out of the 240 respondents, 183 (76.3%) were assessed to have a high knowledge of malaria while 53 (23.7%) had average knowledge of malaria, as shown in the Table 5. However, none of the respondents scored below 50%.

Table 5: Malaria Knowledge among Respondents. (N= 240)

Level of malaria knowledge	Frequency	%
high knowledge	183	76.2
average knowledge	57	23.8

4.3 Treatment Seeking Behaviour

According to the results (table 6), out of 240 pregnant women, 100 (41.7%) presented within 24 hours of malaria symptoms (early treatment seeking behavior), while 58.3% presented after the first day (late treatment seeking behavior).

Table 6: Treatment Seeking Behaviour. (N=240)

Treatment seeking timing	Frequency	%
Early Treatment	100	41.7
Late Treatment	140	58.3

4.4 First place of Seeking Treatment

As shown in Table 7, Health centers/clinics were the first places of seeking malaria treatment by (n=150, 62.5%), drug shops were the first point of seeking treatment for (n=73, 30.4%), local herbs (n= 9, 3.8%) while church/mosque were cited by (n=8, 3.3%) of respondents.

Table 7: First Place of seeking Treatment (N=240)

First place of treatment	Frequency	%
Health centres/clinics	150	62.5
Drug shop/pharmacy	73	30.4
Local herbs ,	9	3.8
Church/Mosque	8	3.3

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4.5 Distance to nearest health centre

Out of the 240 respondents, a large percentage of 51.3% (123) were living close to the health centre (not more than 100metres to the nearest health centre). Ninety five pregnant women lived far from the nearest health centre (more than 100 metres, but not more than 1000metres). however, only 22 of the respondents were residing very far away from the nearest health centre (more than 1000metres).

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Table 8: Distance to nearest health centre. (N=240)

Distance to nearest health centre	Frequency	%
Near	123	51.3
Far	95	39.6
Very far	22	9.1

4.6 Practices towards Malaria Preventive Measures

Out of the 240 pregnant women, 154 which amount to 64.2% slept under insecticide treated net. Among this 154 women, 75 (48.7%) slept under it every day, 52 respondents rarely (33.7%), 22 frequently (14.3%) and just 5 (3.3%) sleeps under insecticide treated nets only during rainy season.

Ninety two pregnant women (38.3%) have presence of water bodies (streams, drainages, stagnant water) in their environments.

Two hundred and thirty four (97.6%) of the respondents have toilet in their house. Out of this, majority (n= 188, 78.3%) use water closet type of toilet, while pit latrines (n=23, 9.6%), and buckets are used by 23 (9.6%) of the respondents.

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Table 9: Practices towards Malaria Preventive Measures.

Practices	Frequency	%
Have Toilet? N=240		
Yes	234	97.5
No	6	2.5
Type of Toilet N= 234		
Pit latrine	23	9.6
Bucket	23	9.6
Water closet	188	78.3
Slept Under Insecticide treated Nets? N-240		
Yes	154	64.2
No	86	35.8
How often do you sleep under ITNs? N= 154		
Rarely	52	33.7
only during rainy days	5	3.3
Frequently	22	14.3
Everyday	75	48.7
Presence of water bodies? N=240		
Yes	92	38.3
No	130	54.2
Not sure	18	7.5

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4.7 Bivariate Analysis

4.7.1 Association between Socio-demographic Characteristics and Treatment Seeking Behaviors

Table 10 shows that pregnant women within age group of 18-24 years were 82% less likely than those of 35 years and above to seek for malaria treatment early, this relationship is significant (OR= 0.18,C.I= 0.04-0.84).

Also Muslim pregnant women were 12.8 times more likely than the Christians to seek for malaria treatment early, the association is also significant (OR=12.8, C.I= 3.45-48.5).

Pregnant women who were without any occupation are 52.6 times more likely than those who were students to seek early for malaria treatment, there is a significant relationship (OR= 52.6, C.I= 3.9-63.9).

Pregnant women with no formal education were 99.7% less likely than those with post tertiary education to seek malaria treatment early, the relationship is significant (OR= 0.003, C.I= 0-0.07). Also, those that only have primary education were 96% less likely than those with post tertiary education to seek malaria treatment early, the relationship is significant (OR= 0.04, C.I= 0.05-0.3).

Table 10 also showed that Hausa pregnant women were 99.8% less likely than those from other minority ethnic group to come early for malaria treatment, with a significant association (OR 0.002, C.I=0-0.04).

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Table 10: Association between Sociodemographic Factors and Treatment Seeking Behaviour

Step 1[a,']		Sig.	Exp(B)	Df	95%	C.I
Age group	35 above (RC)	-	1.00			
	18-24	.029	.177*	1	.037	.841
	25-29	.745	.809	1	.225	2.902
	30-34	.460	1.645	1	.439	6.161
Marital Status	Divorced (RC)	-	1.00	2		
	Married	.515	.497	1	.060	4.086
	Unmarried	.997	.000	1	.000	.
Religion	Christianity (RC)	-	1.00			
	Islam	.000	12.874*	1	3.416	18.518
Occupation	Student (RC)	-	1.00	5		
	Government employee	.154	.345	1	.080	1.489
	Non govt	.622	.618	1	.091	4.187
	Self employed	.092	.346	1	.100	1.191
	Non paid	.003	52.621*	1	3.933	63.942
	Artisan	.821	.846	1	.199	3.601
Level of education	Post tertiary (RC)	-	1.00	4		
	No education	.000	.003*	1	.000	.067
	Primary	.002	.039*	1	.005	.312
	Secondary	.197	.382	1	.089	1.646
	Tertiary	.075	.280	1	.069	1.135
Ethnicity	Others (RC)	-	1.00	3		
	Yoruba	.968	.969	1	.210	4.470
	Hausa	.000	.002*	1	.000	.041
	Igbo	.045	15.829*	1	1.069	234.438
	Constant	.130	12.234	1		

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4.7.2 Association between First Point of Seeking Treatment and Malaria Treatment Seeking Behaviors

Table 11 showed various factors that can influence malaria treatment seeking behavior. The only significant association exists in the category of pregnant women who make health centres clinic as their first point of seeking treatment. They are 44.2 times more likely than those who use local herb to seek for malaria treatment early (OR= 44.2, C.I= 11.6-55.4).

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Table 11: Association between First Place of Seeking Treatment, Distance to nearest health centre and Malaria Treatment Seeking Behaviours

Step 1[a]		Df	Sig.	Exp(B)	95% C.I.	
					Lower	Upper
	Local herbs (RC)	3	-	1.00		
First Place of	Health centre	1	.027	44.198	11.552	55.365
Seeking						
Treatment	Church/mosque	1	.098	.498	.218	1.136
Distance to	Near (RC)	2	-	1.00		
nearest	Far	1	.164	.445	.142	1.392
health centre	Very far	1	.904	.930	.284	3.042

a. Variable(s) entered on step 1

* Significant on the 5 percent level
RC – Reference category

4.7.3 Association between Levels of Knowledge and Malaria Treatment Seeking Behaviors

Table 12 revealed that pregnant women with high level of malaria knowledge are 4.55 times more likely than those with average knowledge to seek for malaria treatment early, the relationship is significant (OR= 4.55, C.I= 2.17-9.55)

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Table 12: Association between Level of Malaria Knowledge and Treatment Seeking Behavior

Step 1[a]		Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
					Lower	Upper
Level of malaria knowledge	Average level (RC)	1	-	1.00		
	High level		.000	4.548	2.167	9.548
	Constant	1	.000	.213		

a. Variable(s) entered on step 1: Levels of Knowledge
* Significant on the 5 percent level
RC – Reference category

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

5.1.1 Socio-demographic characteristics of Respondents

From this study it was noted that younger pregnant women (18-24 years) present late for malaria treatment. This may be due to lack of knowledge of malaria signs and symptoms, as most of them were presenting with their first pregnancies. This contradicts the finding of Mwanje in 2013 which states that youth tend to have better malaria practices towards malaria prevention and control compared to older people. There was a significant association between education and treatment seeking behavior in the study. Pregnant women who are unemployed, without formal education/primary education presented late for malaria treatment. This may be due to lack of fund or/and proper education about malaria signs and symptoms, as most of them will wait till the latter part of malaria episode before seeking for treatment. This corroborates the findings of Adedotun (2010) where he found out that education clearly influences knowledge about modes of malaria transmission. Educated people also have multiple sources of information when compared with their uneducated counterparts (Erhun *et al*., 2004; Adedotun *et al*.. 2010). Bojd *et al*. (2011) also found a significant correlation between the education level of respondents and their interest in participating in malaria control programs as volunteers in Iran. They also were of the opinion that an increasing trend in literacy is a protective factor for malaria morbidity.

Ethnicity and religion were also shown to have significant influences on treatment seeking behaviours. This study revealed that muslim pregnant women sought for early malaria treatment, also Igbo pregnant women, however, Hausa pregnant women don't come early enough for malaria treatment. This may probably be due to their cultural and religious beliefs. Sociocultural beliefs about the causation of disease and its curability have direct correlation with the treatment seeking behaviour of the people (Oberlander, 2000).

5.1.2 Knowledge of Malaria Transmission and Prevention

A low number of respondents (41.7%) stated they sought treatment within 24 hours of onset of malaria symptoms (early treatment seeking behaviour). This is not in line with the Abuja summit on malaria, which says, —at least 60% of those suffering from malaria should seek treatment

within 24 hours of the onset of symptoms| (World Health Organization, 2010). This indicates that there is still sufficient room for improvement in efforts to encourage positive malaria treatment seeking behaviours.

Majority of the respondents in this study (77.1%) had the knowledge about the transmission of malaria, however some of them (14.2%) still believed that malaria can be transmitted through drinking of contaminated water. Reasonable percentage of the respondents (76.3%) had high knowledge about malaria, but only 41.7% showed up early for malaria treatment. This may be the due poor attitude towards malaria treatment. Knowledge, relating to causation, transmission, prevention and treatment are key factors influencing malaria treatment seeking behaviors. Findings have shown that good knowledge, attitude and practices of any public health disease by individuals and communities seems necessary if effective treatment and preventive measures are to be realistic (Iwueze et al., 2013).

5.1.3 Respondents' First Point of Seeking Treatment

There was high number of pregnant women, 150 (62.5%) whose first point of seeking malaria treatment was health centres. Also the relationship between Health Centre as first point of seeking treatment and treatment seeking behavior was significant. This could be due to high level of malaria knowledge as revealed by Bojd et al. in 2011. However this contradicts the findings of Batega in 2004, which revealed that in all studies about health care seeking practices, there is a high level of preference for home treatment outside of the formal health system, as first level of treatment.

Distance to nearest health centre did not appear to have a significant bearing on treatment seeking behavior in this study. This may be due to the high number of respondents who live close to health centres. This contradicts the findings of Nyamongo and Thera (2000) where they found out that patients are more likely to start with self-treatment at home as this practice yields them to minimize expenditure and sufferings in remote areas where transport and health facility are the problem.

Finally, although it was revealed that high level of knowledge of malaria signs and symptoms, and first point of resort has a positive association with malaria treatment seeking behavior, the response to early treatment of malaria is still very low. With 76.3% of the respondents possessing high knowledge of malaria symptoms, and 65% seeking first treatment from health

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centres/clinic, only 41.7% of the pregnant women presented early for malaria treatment. This confirms the negligence and poor attitude towards malaria control and treatment in the finding of Mwanje in 2013.

Study Limitations

Quantitative survey (FGD, KII and IDI) were initially proposed as part of the study, this was to probe various factors responsible for treatment seeking behaviours. But this could not be done because of industrial strike actions in study locations (health facilities). So, future study can address the qualitative aspect to further corroborate this study.

5.2 Conclusion

This present study shows that most of the pregnant women had good knowledge about malaria cause, transmission, signs and symptom; there was no poor knowledge score as all the pregnant women scored above average knowledge score of malaria cause, transmission, signs and symptom. This is a good development towards the control of malaria in the study area.

However, only few of the pregnant women sought early for malaria diagnosis and treatment. The good knowledge of malaria was followed by poor response to early treatment seeking behavior by the pregnant women. This shows bad practices towards malaria risk factors, prevention and control.

Moreover, this study shows some of the vital sociodemographic factors that influence malaria treatment seeking behavior; women of younger age didn't seek for early malaria treatment. Also, women without formal education sought late for malaria treatment. Other factors that influenced malaria treatment seeking behavior from this study include: religion, occupation and ethnicity. Also, the fact that many pregnant women used the health facilities for treatment of malaria and this was associated with early treatment seeking behavior is encouraging.

5.3 Recommendations

Although knowledge about malaria transmission and prevention was generally good, it did not translate into early treatment seeking behaviour. The following are the recommendations:

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1. Provision of mass education and health education campaigns will go a long way to ameliorate the negligence by pregnant women in Ondo West LGA towards early treatment seeking behaviour.
2. Also the need improve the dissemination of appropriate information on malaria in Ondo West LGA through active education campaigns to encourage early treatment seeking behavior and utilization of health centres especially among younger women and uneducated pregnant women in Ondo West LGA.

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APPENDIX I

CONSENT FORM

TOPIC: **MALARIA TREATMENT SEEKING BEHAVIOUR AND CORRELATES AMONG PREGNANT WOMEN IN ONDO WEST LOCAL GOVERNMENT AREA**

INVESTIGATOR: OLAFUSI OLUWATOSIN SAMSON

Dear Respondent,

I am a post graduate student currently undergoing training in the Department of Epidemiology, Faculty of Public Health, University of Ibadan.

I am currently undertaking a research work on the malaria treatment seeking behaviour and correlates among pregnant women in Ondo west local government, Ondo state. The study is aimed to identify different factors associated with different malaria treatment behaviours among pregnant women and explore these factors in making recommendations to the preventive strategies and treatment of malaria among pregnant women. I request your cooperation to obtain all necessary information needed in this study.

Participation in the study is voluntary and all information you give will be treated with utmost confidentiality and will be used strictly for research purpose. You are free to decline or withdraw at any stage if you wish to.

Thank you for your cooperation.

CONSENT

I have been fully informed about the protocol of the study titled above. I am willing to participate in this study. I have right to decline at any stage of the study.

Participant signature :......................................

Date ....

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QUESTIONNAIRE

MALARIA TREATMENT SEEKING BEHAVIOUR AND CORRELATES AMONG PREGNANT WOMEN IN ONDO WEST LOCAL GOVERNMENT AREA

SECTION A
SOCIAL DEMOGRAPHIC CHARACTERISTICS

1. Age (in years) ....
2. Marital status (i) Married (ii) Unmarried (iii) Divorced (iv) Widowed
3. Religion (i) Islam (ii) Christianity (iii) Others, specify_____
4. Occupation (i) Government employee (ii) Non-government (iii) Self-employed (iv)Retired (v) Non-paid (vi) Artisan (vii) Student
5. Education
   a) No formal schooling □
   b) primary □
   c) secondary □
   d) Tertiary □
   e) Post Tertiary □
6. Ethnicity (a) Yoruba (b) Hausa (c) Igbo (d) Others, specify_____
7. How many child(ren) do you have _____

SECTION B
BASIC KNOWLEDGE ABOUT MALARIA

8. Have you ever heard about Malaria?
   Yes □
   No □
   I don't know □
9. Which vector can transmit Malaria to humans? (Tick one only)
   a) Rat □
   b) Dog □
   c) Mosquito □
   d) Cockroach □
   e) I don't know □

10. Malaria can be transmitted to humans by?
    a) Drinking contaminated water □
    b) Eating contaminated food □
    c) Eating a lot of mangoes □
    d) Bite of mosquito infected with Malaria □
    e) Coming into close contact with a Malaria patient □
11. Do you think Malaria can kill you if it's untreated?
    Yes □
    No □
    I don't know □
12. What do you think are the most common signs and symptoms of Malaria infection? (Tick all that apply)

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a) High temperature/Fever ☐
b) Loss of energy ☐
c) Vomiting ☐
d) Sweating ☐
e) Headache ☐
f) Body pains ☐
g) Itching ☐
h) Loss of appetite ☐
i) Dizziness ☐
j) I don't know ☐

13. Which of these are ways to prevent and control Malaria? (Tick all that apply)
    a) Sleeping inside insecticide treated nets ☐
    b) Wearing long sleeved clothes ☐
    c) Making fire and smoke ☐
    d) Spraying Insecticide
    e) Trimming bushes around the house pain ☐
    f) Cleaning dark corners in the house ☐
    g) I don't know ☐

14. What personal protection measures do you use to sguard against Malaria? (Tick all that apply)
    a) Use repellents ☐
    b) Use mosquito coil ☐
    c) Burn cow dung/leaves ☐
    d) Close windows and doors ☐
    e) Gauze wire in windows ☐
    f) Use mosquito nets ☐
    g) Do nothing ☐

15. Have you ever heard or received any information related Malaria? (Tick only one)
    Yes ☐
    No ☐
    I don't know ☐

16. If yes, from which sources have you heard or received information about Malaria? (Tick all that apply)
    a) Family member/friends ☐
    b) Radio ☐
    c) Television ☐
    d) Newspapers ☐
    e) Posters/pamphlets ☐
    f) Health centre/clinic ☐
    Others, Specify _____

SECTION C
RISKS FACTORS OF MALARIA

17. How many persons live inyour house (family size)? _____
18. Is there any presence of water bodies in your area (streams, drainage, stagnant water etc.)? (a) Yes (b) No (c) Not sure
19. Do you have a toilet in your house? (a) Yes (b) No.

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20. If Yes, what type
    a) Pit Latrine
    b) Bucket
    c) Water closet
21. Do you sleep under Insecticide treated nets? (a) Yes (b) No
22. If yes, how often
    a) Rarely
    b) Only during rainy season
    c) Frequently
    d) Everyday

SECTION D

TREATMENT SEEKING BEHAVIOURS

23. How many days ago did the fever start? _____

24. Have you suffered from Malaria in the last six months (Tick only one)
    Yes ☐
    No ☐
    I don't know ☐

25. Have you ever suffered from malaria in any of your previous pregnancies?
    Yes ☐
    No ☐
    I don't know ☐

26. How soon after suspecting Malaria would you seek treatment?
    a) One day (within 24 hours) ☐
    b) 2-3 days ☐
    c) 4-6 days ☐
    d) 7 days or more ☐
    e) I don't know ☐

27. If you do not seek treatment immediately (within 24 hours), what would you do?

    _____

28. Do you think you have enough information about Malaria? (Tick only one)
    Yes ☐
    No ☐
    I don't know ☐

29. If No, what information would you like to get about Malaria?
    a) Information on treatment ☐
    b) Information on control ☐
    c) Information on prevention ☐
    d) Signs and symptoms ☐
    e) Nature of the disease ☐

SECTION E
FACTORS THAT INFLUENCE MALARIA TREATMENT SEEKING BEHAVIOURS

30. What is the highest level of education that you have achieved? (Tick only one box)
    a) No formal schooling ☐
    b) Incomplete primary school ☐
    c) Complete primary school ☐

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d) Incomplete secondary school ☐
e) Complete secondary school ☐
f) Tertiary education ☐

31. How often do you visit the hospital for medical checkup?
   a) I don't know
   b) Occasionally
   c) Only when sick
   d) Frequently

32. Where is your first point to seek treatment whenever you have malaria?
   a) Health centre/clinic ☐
   b) Church/mosque ☐
   c) Drug shop /pharmacy ☐
   d) Look for local herbs ☐

33. How distant is the nearest health centre to your house?
   a) Near
   b) Far
   c) Very far
   d) I don't know

SECTION F

KNOWLEDGE OF MALARIA TRANSMISSION, PREVENTION AND TREATMENT

SD=strongly disagree, D= disagree, N= neutral, A= agree, SA= strongly agree

S/N	ATTITUDES	SD	D	N	A	SA
34	I think that Malaria is a serious and life-threatening disease					
35	Malaria can be transmitted from one person to another like the common cold					
36	I think the best way to prevent myself getting Malaria is to avoid getting mosquito bites cold					
37	I am sure that anyone can get Malaria					
38	I believe sleeping under a mosquito net during the night is one way to prevent myself getting Malaria					
39	In my opinion, only children and pregnant women are at risk of Malaria					
40	I think that one can recover spontaneously from Malaria without any treatment					
41	If someone has got Malaria, people should avoid having close contact with him/her					
42	I might be at a greater risk of getting Malaria if I work and sleep overnight in the garden or forest					
43	I think that I should go to the health centre/clinic to have my blood tested as soon as I suspect that I have suffered from Malaria					

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Ondo

ISÉ LOÒGUN IṢÉ

ONDO STATE GOVERNMENT
Office of the Commissioner

AD. 4693/209/209

18 February, 2015

Olafusi. Oluwatosin. S.,
Department of Epidemiology and Medical Statistics,
Faculty of Public Health,
University of Ibadan.

APPROVAL OF ETHICAL REVIEW COMMITTEE

The proposal on *"Malaria Treatment Seeking Behavior and Correlates among Pregnant Women in Ondo West Local Government Area"* has been reviewed

The committee found the research proposal to be in compliance with guidelines for research study

In view of the foregoing, the Committee has given approval for the conduct of the study as proposed.

Best regards

Dr. E. F Oni.
Permanent Secretary/Chairman
Research Ethical Review Committee