

**PREVALENCE OF MALARIA AMONG PREGNANT MOTHERS
ATTENDING ANTENATAL CARE AT ATUTUR
HOSPITAL KUMI DISTRICT UGANDA**

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(DCM/0079/143/DU)

**A REASEARCH REPORT SUBMITTED TO THE SCHOOL OF ALLIED
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CAMPUS**

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DECLARATION

I, AKOL TOPHISTAR declare that the research report submitted to the school of allied health sciences is my own and has never been submitted to any institute of higher learning by any individual for any award of a diploma or its equivalent.

Signature..... Date...../...../.....

APPROVAL

This research report entitled “**Prevalence of Malaria among Pregnant Women Attending Antenatal Care at Atutur Hospital Kumi District, Uganda**” has been produced under my supervision and submitted to School Allied Health Sciences for approval.

Supervisor:

Dr. Oyik Bruno

Signature Date/...../.....

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DEDICATION

This piece of work is dedicated to my beloved family, relatives and mentors who showed devotion and maximum support during the long journey in medical school.

I specifically dedicate this piece of work to my daughter **Acham Agatha** who was born when I was at the climax of this course and my mother **Acham Florence Jane** who has been very supportive throughout my studies despite her other obligations.

LIST OF ABBREVIATIONS

AIDS	:	Acquired Immune Deficiency Syndrome
ANC	:	Antenatal clinic
CDC	:	Center of Disease Control
HIV	:	Human Immunodeficiency Virus
IPT	:	Intermittent Preventive Treatment
ITNs	:	Insecticide Treated Mosquito Net
IUGR	:	Intra Uterine Growth Retardation
LBW	:	Low Birth Weight
MoH	:	Ministry of Health
MiP	:	Malaria in Pregnancy
NGO	:	Non-Government Organization
RBC	:	Red Blood Cell
UNICEF	:	United Nations International Children's Emergency Funds
WHO	:	World Health Organization

DEFINITION OF TERMS

Anemia	A condition in which the number of red blood cells is less than normal.
Endemic	A disease or condition regularly found and very common among a particular group in a particular area.
Epidemic	An occurrence of a disease or disorder in a population at a frequency higher than that expected in a given time period or occurrence in a community/region of cases of an illness.
Gravida	A pregnant woman by number of pregnancies; (primi gravida) a woman in her first pregnancy.
Hemoglobin	Iron-containing substances in red blood cell that transports oxygen.
Intermittent	It means an event happening regularly or continuously; stopping and starting.
IPT	Refers to the administration of 2 or more doses of chemoprophylaxis.
Morbidity	Incidence of a disease, as a rate of a population which is affected
Mortality	The death rate of a population.
Parasitemia	The presence of parasites in circulating blood.
Prevalence	The total number of disease in the given statistical population at a given time divided by the number of individuals in the population
Tertian	Recurring every third day, actually every 48 hours or every other day; tertian fever pertaining to <i>Vivax malaria</i>
Trimester	The period of three months or about three months of pregnancy

ABSTRACT

Introduction; It is estimated that in 2004 eight million Ugandans were exposed to unstable malaria, and five million were exposed to a low risk of stable malaria. Approximately four million people, including 677,000 children, were living in areas of high transmission(Snow and Gouws, 2005).

Main Objective; to determine the prevalence of malaria among pregnant women attending, at Atutur Hospital Kumi District Uganda.

Methods; It was a cross-sectional study involving all mothers who were sampled randomly with sound minds who came for antenatal care with history of malaria management in current pregnancy and data concerning this group of mothers was collected using a structured questionnaire administered by the researcher and corresponding answers ticked with a pencil and results were presented in form of tables and pie chart.

Results; 55% of respondents had ever gotten malaria while pregnant while 45% had never gotten malaria, 82% of the mothers were aware of malaria prevention, 96% used mosquito nets, 85% got fansidar 87% had no stagnant water and 78% had no bushes around their homes, 53% had malaria in their 3rd trimester, 31% in their 2nd trimester and 16% in their 1st trimester.

Conclusion; There was high incidence of malaria; almost no health related factors and 3rd trimester had the most vulnerability. Therefore malaria still remains a burden with almost no associated factors and 3rd trimester being affected most.

Recommendations; Government should endeavor to employ enough health workers in order to health educate the pregnant mothers in the community on the importance of preventive measures of malaria. There is need for massive health education about all aspects of malaria and mobilization of resources to counter the increasing prevalence rate of malaria.

Table of Contents

DECLARATION	i
APPROVAL	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF ABBREVIATIONS	v
DEFINITION OF TERMS.....	vi
ABSTRACT	viii
CHAPTER ONE.....	1
1.0 INTRODUCTION	1
1.1 BACKGROUND OF THE STUDY	1
1.1.2 BURDEN OF MALARIA IN PREGNANCY IN AFRICA.....	2
1.1.3.BURDEN OF MALARIA IN PREGNANCY IN UGANDA	3
1.2 PROBLEM STATEMENT.....	4
1.3 STUDY OBJECTIVES	5
1.3.1 GENERALOBJECTIVE.....	5
1.3.2 SPECIFIC OBJECTIVES	5
1.4RESEARCH QUESTIONS	5
1.5STUDY JUSTIFICATIONS.....	6
1.6 SCOPE OF THE STUDY	6
1.7 CONCEPTIAL FRAME WORK.....	7
CHAPTER TWO.....	8
LITERATURE REVIEW	8
2.0 INTRODUCTION	8
2.1 PREVALENCE OF MALARIA IN PREGNANCY	8
2.2: RELATIONSHIP BETWEEN THE SOCIO-DEMOGRAPHIC	8
2.3:PREVALENCE OF MALARIA ACCORDING TO TRIMESTERS	9
CHAPTER THREE.....	10
METHODOLOGY	10
3.0INTRODUCTION	10
3.1 STUDY DESIGN.....	10

3.2STUDY AREA	10
3.3 STUDY POPULATION.....	10
3.3.1 INCLUSION CRITERIA.....	10
3.3.2 EXCLUSION CRITERIA.....	10
3.4 STUDY VARIABLES	11
3.4.1 DEPENDENT VARIABLE.	11
3.4.2 INDEPENDENT VARIABLES	11
3.5 SAMPLE SIZE DETERMINATION.....	11
3.6 DATA COLLECTION.....	12
3.7 ANALYSIS OF DATA	12
3.8 QUALITY CONTROL	12
3.9 ETHICAL CONSIDERATION	12
3.9.1 APPROVAL	12
3.9.2 PERMISSION	12
CHAPTER FOUR	13
FINDINGS OF THE STUDY	13
4.0 INTRODUCTION	13
5.1DISCUSSION	16
5.2 Conclusion	17
5.3 RECOMMENDATION.....	17
REFERENCES	19
APPENDICES	22
Appendix I: Consent Form.....	22
Appendix II: Questionnaires	23
Appendix III: Map of study area	25
Appendix IV: Map of Uganda.....	26

LIST OF TABLES

Table 1 Social Demographic Characteristic	13
Table 2 Level of prevalence of malaria among pregnant mothers attending antenatal Care at Atutur Hospital Kumi District Uganda.....	14
Table 3 Health related factors associated with malaria prevalence among pregnant mothers attending antenatal care at Atutur Hospital Kumi District Uganda.....	14
Table 4 Trimester of malaria vulnerability among mothers attending Antenatal care at Atutur Hospital kumi district Uganda.	15

CHAPTER ONE

1.0 INTRODUCTION

This chapter deals with background of the study, global malaria burden, burden of malaria in pregnancy in Africa, burden of malaria in pregnancy in Uganda, problem statement, study objectives, research questions, study justification, conceptual frame work and scope of the study.

1.1 BACKGROUND OF THE STUDY

Globally, Malaria is a life threatening parasitic disease transmitted by female Anopheles mosquitoes. More than 40% of the world population lives in malarias areas(World Health Organisation., 2010). According to the report, there were 212 million new cases of malaria worldwide in 2015 (range 148–304 million). The WHO African Region accounted for most global cases of malaria (90%), followed by the South-East Asia Region (7%) and the Eastern Mediterranean Region (2%) (WHO, 2016a). In 2015, there were an estimated 429 000 malaria deaths (range 235 000–639 000) worldwide (WHO, 2016a).

Malaria infection during pregnancy is a major public health Problem in tropical and subtropical regions throughout the world (WHO, 2010). The burden of malaria infection during pregnancy is Caused mainly by Plasmodium falciparum (*P. falciparum*), the most common malaria species in Africa (World Health Organisation., 2010).

P. falciparum infection in pregnancy leads to parasite sequestration in the maternal placental vascular space, with consequent maternal anemia and infant low birth weight (LBW) due to both prematurity and intrauterine growth retardation (IUGR). Malaria control still remains a challenge in Africa where 45 countries, including Nigeria, are endemic for malaria, and about 588 million people are at risk (World health organization, 2013). The protection of pregnant women living in malaria-endemic countries has been of particular interest to many National Malaria Control Programme because of their reduced immunity. Most cases of malaria in pregnancy in areas of stable malaria transmission are asymptomatic (Wellington, 2009).

To assess the magnitude of the burden of malaria in pregnancy and its contribution to infant mortality, we evaluated data from published and unpublished studies during the last 15 years (1990–2005) and focus on sub-Saharan Africa, where data are most available. Because of the

multiple pathways for the chain of events between maternal malaria infection and infant mortality, we specifically sought studies that evaluate malaria, anemia, and HIV infection and their contribution to low birth weight and potentially to infant mortality. There is a paucity of population-based data on malaria in pregnancy in settings of low malaria endemicity. Between 2010 and 2015, malaria incidence rates (new malaria cases) fell by 21% globally and in the African Region. During this same period, malaria mortality rates fell by an estimated 29% globally and by 31% in the African Region (WHO, 2016a).

1.1.2 BURDEN OF MALARIA IN PREGNANCY IN AFRICA

Over 90% of all deaths caused by malaria occur in sub – Saharan Africa and about 85% of deaths globally were in children under 5 years of age (World Health Organisation., 2010). In 2012, an estimated 627,000 people died of malaria—most were young children and pregnant women in sub-Saharan Africa. Within the last decade, increasing numbers of partners and resources have rapidly increased malaria control efforts(CDC, 2013). In Nigeria, past studies reported malaria parasite prevalence of between 60% and 72% among pregnant women(Akinleye, 2009). Malaria during pregnancy causes up to 10,000 maternal deaths each year and contributes to high rate of maternal morbidity including fever and severe anemia, especially in first time mothers and recent study estimated that malaria contributes to 3-5% of maternal anemia, 8-14% of low birth weight and 3-8% of infant mortality(Sarbin, 2010).

Nigeria suffers the world’s greatest malaria burden, with approximately 51 million cases and 207,000 deaths reported annually (approximately 30 % of the total malaria burden in Africa), while 97 % of the total population (approximately 173 million) is at risk of infection(WHO, 2015)

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. 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. 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(World Health Organisation., 2010).

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. The malaria situation in these countries is not considered further in this report.

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), and on Pemba and Zanzibar, but has been eliminated from the island of Reunion. In Mauritius, malaria has been well controlled since the 1950s, but occasional outbreaks of *vivax* malaria occur, the last in association with a cyclone in 1982. Since that year there has been a steady decrease in cases and risk is now extremely low. Seychelles has been free of malaria since 1930, and malaria vectors are believed to no longer exist there (UNICEF, 2008).

1.1.3. BURDEN OF MALARIA IN PREGNANCY IN UGANDA

Uganda has a diverse climate and ecology supporting the entire range of stable and unstable transmission conditions. Malaria is a major public health problem, and in many parts of the country, pregnant women and children below the age of five are most at risk of developing clinical disease. It is estimated that in 2004 eight million Ugandans were exposed to unstable malaria, and five million were exposed to a low risk of stable malaria. Approximately four million people, including 677,000 children, were living in areas of high transmission (Snow and Gouws, 2005).

In malaria endemic areas where Health Right International has implemented programs on HIV/AIDS, malaria and maternal and neonatal health, malaria is the leading killer of children and pregnant women. Already facing limited access to health care, pregnant women are also at a higher risk of malaria infection as pregnancy reduces the body's ability to fight disease. Once infection occurs, malaria increases the chance of death or illness for both the mother and child (Ministry Of Health, 2010).

Depending on the level of transmission in an area, a malaria infection can affect the mother and fetus in different ways. When located in the placenta, the parasites impede the flow of nutrients

between mother and fetus causing low birth weight, which decreases the chance of infant survival (MOH, 2006). This poses direct risks to both mother and fetus. Pregnant women in epidemic prone regions have a 2-3 times higher risk of developing severe malaria than non-pregnant women from the same area. In sub-Saharan Africa, malaria infection causes an estimated 400,000 cases of severe maternal anemia annually (Ministry Of Health Bulletin, 2007).

In order to reduce the burden of malaria infection among pregnant women, Health Right is working in partnership with Uganda Ministry of Health to provide prevention services according to WHO standards, including insecticide-treated mosquito nets and anti-malaria medication during antenatal visits. Health Right is also working to train, monitor and mentor health care providers at hospitals, health centers and dispensaries to improve diagnosis and treatment services (Ministry Of Health Bulletin, 2007).

1.2 PROBLEM STATEMENT

Globally, approximately 214 million cases of malaria occur annually and 3.2 billion people are at risk of infection (WHO, 2015). In sub-Saharan Africa, approximately 438,000 deaths were attributed to malaria in 2015, particularly in sub-Saharan Africa, where an estimated 90 % of all malaria deaths occur (WHO, 2015). As a critical target of the Millennium Development Goals, in 2005, the World Health Assembly established a goal of reducing malaria cases and deaths by 75 % between 2005 and 2015 (WHO, 2016).

The burden of malaria in pregnancy is thought to be influenced by the presence of mosquito vectors, lack of enough diagnostic and treatment facilities especially in the rural areas in the districts, inaccessibility to preventive and community mobilization on the dangers of malaria in pregnancy and inadequate prophylactic drugs (Snow and Gouws, 2005). Malaria control still remains a challenge in Africa where 45 countries, including Nigeria, are endemic for malaria, and about 588 million people are at risk (World health organization, 2013). The protection of pregnant women living in malaria-endemic countries has been of particular interest to many National Malaria Control Programmes because of their reduced immunity. Most cases of malaria in pregnancy in areas of stable malaria transmission are asymptomatic (Wellington, 2009).

According to the Ministry of Health (Ministry, 2015) Eastern Uganda was ranked second in malaria prevalence (27%), Atatur exclusive that shows that women attending antenatal care at Atatur Hospital being no exceptional

Despite the above efforts by the Ugandan government, malaria still continues to cause significant mortality and morbidity because of poor utilization of services and other associated factors which calls for such a study to establish the prevalence in pregnancy in Atatur Hospital Kumi District. The outcome of the study will provide a basis on the feasible solutions to the problem.

1.3 STUDY OBJECTIVES

1.3.1 GENERAL OBJECTIVE

To determine prevalence of malaria among pregnant mothers attending antenatal care at Atatur Hospital Kumi District, Uganda.

1.3.2 SPECIFIC OBJECTIVES

- 1) To determine the number of pregnant mothers with malaria attending antenatal care at Atatur Hospital Kumi District.
- 2) To identify the socio economic factors responsible for the prevalence of malaria among pregnant mothers attending antenatal care at Atatur Hospital Kumi District.
- 3) To determine which trimesters malaria is most common among pregnant mothers attending antenatal care at Atatur Hospital Kumi District.

1.4 RESEARCH QUESTIONS

This study will answer the following questions: -

- 1) What is the number of pregnant mothers with malaria attending antenatal care at Atatur Hospital Kumi District?
- 2) What are the socio economic factors responsible for the prevalence of malaria among mothers attending antenatal care at Atatur Hospital Kumi District?
- 3) What trimesters are pregnant mothers attending antenatal care at Atatur Hospital Kumi District most vulnerable to malaria infection?

1.5 STUDY JUSTIFICATIONS

Malaria in pregnancy (MiP) is a major public health problem in endemic areas of sub Saharan Africa, it possess substantial risk to the mother and fetus. Malaria accounts for 30%-50% of outpatient visits and 15%-20% of hospital admissions in Uganda(PMIU, 2015). There is very little research work which was done concerning prevalence of malaria among pregnant women at Atutur Hospital. This research will act as a reference material for future researchers on the same topic.

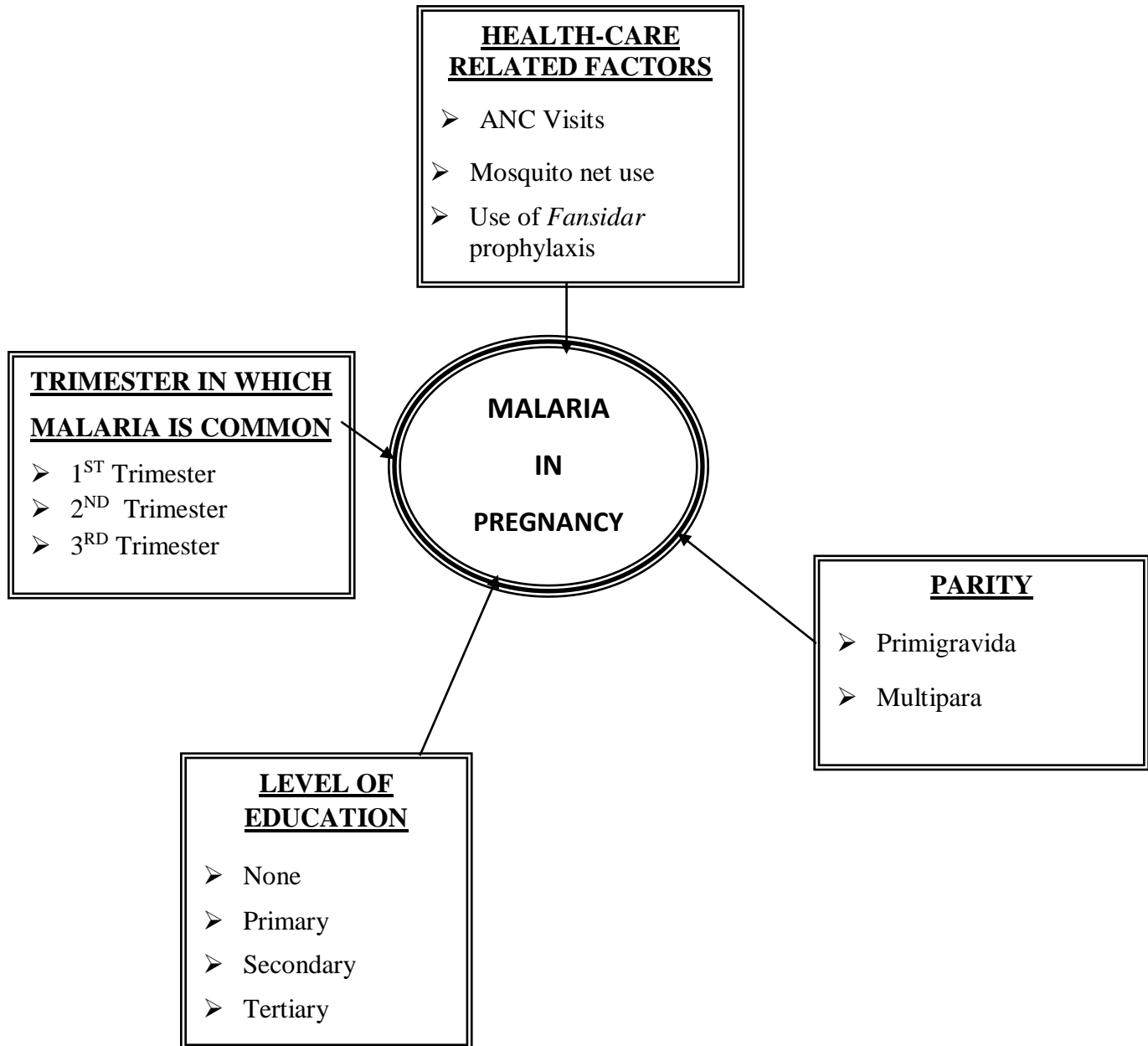
This study will also help authorities to achieve aims and objectives of improving the health status of pregnant mothers and improve safe motherhood also be used by stake holders to improve the health of the pregnant mothers as well as their unborn babies. Finally the research will go a long way in ensuring the partial fulfillment for the award a diploma in clinical medicine and community health at Kampala International University for the research

1.6 SCOPE OF THE STUDY

The study mostly described the prevalence of malaria among pregnant mothers attending antenatal care at Atutur Hospital Kumi District Uganda, socio economic factors, trimester of malaria vulnerability and the incidence rate was also studied.

1.7 CONCEPTIAL FRAME WORK

Conceptual framework of prevalence of malaria among pregnant mothers attending antenatal care at **Atutur Hospital Kumi District Uganda**.



CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter deals with review of other researcher's work that was well understood. It is divided into incidence of malaria in pregnancy, prevalence of malaria according to trimesters and the relationship between the socio demographic profile and prevalence of malaria.

2.1 PREVALENCE OF MALARIA IN PREGNANCY

The presence of malaria parasites in the blood of newborns may be as a result of congenital malaria as reported by (Oduwole et al, 2011). Congenital malaria, defined as the presence of malaria parasites in the erythrocytes of newborns aged less than 7 days, was considered rare in endemic areas until recent studies started reporting high prevalence rates (Oduwole et al, 2011). Another study revealed that Nigeria's battle against malaria has a long way to go. A high prevalence of *falciparum* malaria was reported among rural populations in Kano State, hence there is an urgent need to identify innovative and integrated control measures to reduce malaria prevalence significantly in these communities (SalwaDawaki et al, 2016).

Malaria is also estimated to cause 20% of all deaths in children most of which are in the malaria endemic areas .The most vulnerable groups are pregnant women and children under 5 years of age. According to research done in Uganda by (De Beaudrap et al, 2013). About 288 mothers out of 1069(27%) had peripheral malaria infections. Women with placental parasitemia had higher incidence of low birth compared to those without placental parasitemia. However Uganda has a stable *P. falciparum* transmission in 95% of the country while remaining 5% mainly the high land areas with altitudes >1,600m are subjected to low and unstable malaria transmission (Namusoke f. niloofarR., 2010).

2.2: RELATIONSHIP BETWEEN THE SOCIO-DEMOGRAPHIC PROFILE AND PREVALENCE OF MALARIA IN PREGNANCY

Every year 125 million pregnancies occur in malaria-endemic countries (Dellicour et al, 2010). Pregnancy-associated malaria can result in maternal anemia, low birth weight, prematurity, and

increased infant mortality(Hartman, 2010). To prevent these health consequences, antenatal clinics distribute bed nets and provide intermittent preventive therapy (IPT) with sulfadoxine-pyrimethamine. However, women in sub-Saharan Africa typically seek out antenatal care late in pregnancy(Sarah, 2015).

In Africa alone, 30 million women in malaria endemic areas become pregnant each year. For these women, malaria is a threat both to themselves and their unborn babies with up to 200,000 newborn deaths occurring each year as a result malaria in pregnancy. For the unborn child maternal malaria increases the risk of spontaneous abortion, stillbirth, premature delivery and low birth weight, a leading cause of child mortality. Since 2010, the malaria mortality rate declined by 58% in the Western Pacific Region, by 46% in the South-East Asia Region, by 37% in the Region of the Americas and by 6% in the Eastern Mediterranean Region (WHO, 2016).

P. falciparum as the cause of severe complicated malaria is responsible for about 92% of infections and cases. In Tanzania 20-25% clinical failure of treatment was reported in the coastal belt. In Uganda socio economic factors like fansidar use decreased malaria infection by 57% (Rogerson et al, 2014).

2.3: PREVALENCE OF MALARIA ACCORDING TO TRIMESTERS

However, it is established that immune suppression is evident during the second trimester of pregnancy, and this possibly results from the presence of high adrenal steroid levels, as well as chorionic gonadotropin and feto protein in the blood, there may also be depression of the lymphocyte activity. This may have been the reason for the higher susceptibility to malaria by women in their second trimester of pregnancy, as recorded in most of the studies(Oliver et al, 2011).

The path physiology of malaria is greatly due to the altered immunity and availability of a placenta in pregnancy.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

This deals with the following topics study area, study variables, study design, study population, sample size determination, data collection, quality control and analysis and ethical consideration.

3.1 STUDY DESIGN

It was across sectional study to determine the prevalence of malaria in pregnant mothers in Atutur Hospital Kumi district. Data concerning malaria prevalence among this group of mothers was obtained from the mothers. A questionnaire was prepared and all the necessary information concerning the study population was collected.

3.2 STUDY AREA

The study was conducted by the researcher at Atutur Hospital Kumi District Uganda and the approximate numbers of mothers who come for antenatal care are 720 pregnant mothers per month. The associated health care related factors, practice towards malaria prevention and trimesters in which malaria is common were also under study.

3.3 STUDY POPULATION

3.3.1 INCLUSION CRITERIA

All Pregnant mothers who are 18-45 years of age who have stayed in Atutur for 5years or more and have consented to the study, those with a history of confirmed blood slide or current blood slide, history of management of malaria and those with sound minds with no psychological problems.

3.3.2 EXCLUSION CRITERIA

All those pregnant mothers who were critically ill and mentally unwell were not included in the study.

3.4 SAMPLING METHOD

A random sampling method was used to capture the population of interest which included all pregnant mothers attending antenatal care at the hospital clinic.

3.5 STUDY VARIABLES

3.5.1 DEPENDENT VARIABLE.

Malaria prevalence in pregnancy

3.5.2 INDEPENDENT VARIABLES

Health care related factors

Practice towards malaria prevention

Trimesters in which malaria is common

3.6 SAMPLE SIZE DETERMINATION

The study was limited to a lesser number of pregnant women treated for malaria at Ataturk Hospital Kumi District. The sample size was determined using the formula of Fisher et al., (1965). As shown below;

$$N = \frac{Z^2 PQ}{D^2}$$

Where;

N=sample size

Z=standard deviation at the required degree of accuracy which at 95% is 1.96

P=proportion of pregnant women with malaria {P=15% (PMIU, 2015; Rogerson et al., 2014)}

Q=1-P (percentage of pregnant women without malaria); Q=1-0.2 =0.85

D=the acceptable degree of error =5%=0.05

$$\text{Therefore } N = \frac{(1.96^2 \times 15 \times 85)}{5^2} = 195$$

So, sample size (N) =195 Pregnant women.

3.7 DATA COLLECTION

Data was collected using a structured questionnaire which was administered by the researcher and the corresponding answers to the questions ticked in the corresponding space using a pencil for purpose of accuracy and avoid mistakes.

3.8 ANALYSIS OF DATA

Data collected was analyzed in form of tables and pie chart in respective of each objective, percentages were also used and descriptive words were used to explain the data that was represented.

3.9 QUALITY CONTROL

To ensure quality control, I conducted a one day training for the one research assistant who there-after did field testing of the study tools. A total of four questionnaires were distributed for the pre-test with my close supervision.

3.10 ETHICAL CONSIDERATION

3.10.1 APPROVAL

My topic of interest upon submission to the office of the research coordinator was approved and a letter addressing me to my research supervisor was given.

3.10.2 PERMISSION

Attached is a letter from the administrators office that was addressed to the authorities concerned introducing me to my place of interest and to allow me carry out the study.

Permission was also granted by the hospital administrator who stamped and signed in the same letter forwarding me to the antenatal care unit where the study was to be carried out also attached.

Also introduced myself to the population of interest before carrying out the study.

CHAPTER FOUR

FINDINGS OF THE STUDY

4.0 INTRODUCTION

This chapter contains a full statement of the study findings recorded, analyzed and presented in form of tables. Data was analyzed in terms of percentage frequency distributions. A total of 195 respondents ranging from 18-45years of age participated in the study.

Table 1 Social Demographic Characteristic

A population of 195 pregnant mothers who were attending antenatal care at Atutur Hospital Kumi District Uganda participated in the study which was carried out by the researcher.

According to the table below I found out that 53% of the mothers were between the age of 18 to 25,96% of them were married,65% of them were protestants,83% had primary level of education and a majority (94%) were peasants.

Variable	Frequency	Percentage (%)
1. Age		
18-25	103	53
26-35	81	41
36-45	11	06
2. Marital status		
Single	01	01
Married	187	96
Divorced	03	01
Others	04	02
3. Religion		
Catholic	50	25
Protestants	126	65
Others	19	10
4. Education level		
Primary	162	83
Secondary	33	17
Tertiary	00	00
5. Occupation		
Civil servant	02	01
Business	08	04
Peasant	183	94
Others	02	01

Table 2 Level of prevalence of malaria among pregnant mothers attending antenatal Care at Atatur Hospital Kumi District Uganda.

According to the table below majority (55%) of the mothers have ever gotten malaria infection during the current pregnancy mean while the 45% of the mothers had never suffered from malaria while pregnant.

MALARIA IN PREGNANCY	FREQUENCY	PERCENTAGE (%)
yes	107	55
no	88	45

Table 3 Health related factors associated with malaria prevalence among pregnant mothers attending antenatal care at Atatur Hospital Kumi District Uganda.

According to the table below results showed that 82% of the mothers were aware of malaria prevention measures, 96% slept under insecticide treated mosquito nets, 85% of the mothers had got fansidar during pregnancy, 87% of the mothers had no stagnant water around their homes and 78% of the mothers never had bushes around their houses.

VARIABLE	FREQUENCY	PERCENTAGE (%)
1.Malaria Prevention		
Yes	160	82
No	35	18
2.Treated Net Use		
Yes	188	96
No	07	04
3.Fansidar Use		
Yes	166	85
No	29	15
4.Stagnant Water		
Yes	25	13
No	170	87
5.Bushes		
Yes	42	22
No	153	78

Table 4 Trimester of malaria vulnerability among mothers attending Antenatal care at Atatur Hospital kumi district Uganda.

The trimester in which malaria was greatest was the third trimester (53%) followed by second trimester with 31% and lastly 16% in first trimester?

VARIABLE	FREQUENCY	PERCENTAGE (%)
Trimester		
1st trimester	31	16
2nd trimester	60	31
3rd trimester	104	53
Total	195	100

CHAPTER FIVE

5.1 DISCUSSION

5.1.1 Findings

According to objective 1 findings, malaria prevalence was 55% compared to the previous research finding in chapter 2 where the prevalence was 27% of the mothers had peripheral malaria (De Beaudrap et al., 2013) a study carried out in Uganda with a population of 1069 of pregnant which is different from my findings implying that malaria is still a burden among the pregnant mothers especially in the area of study.

According to objective 2 findings, there were almost no health related factors since majority of mothers were sleeping under insecticide treated mosquito nets, had no bushes and stagnant water around their homes, took at least 1st or 2nd dose of fansidar and also most of the mothers were aware of preventive measures except the minority who had bushes around their houses(22%),stagnant water(13%), those who have never got fansidar(15%),those who were not using mosquito nets(04%) and those who were not aware of any malaria preventive measures(18%) compared to the previous finding by other researchers there is really a big difference where socio economic factors like fansidar use decreased the malaria infection by 57% (Rogerson et al., 2014) which implies that socio economic factors play little or no role in malaria apart from other mothers coming late for antenatal care was reported.

According to objective 3 findings, malaria was common in the 3rd trimester, followed by 2nd trimester and lastly 1st trimester compared to the previous findings where malaria was common in 2nd trimester(Oliver et al, 2011) with associated factors like increased adrenal steroids levels, chronic Gonadotropin and fetoprotein in the blood which is a difference with my findings.

5.1.2 Strengths

In this study a large number of pregnant mothers attending antenatal care at Atatur Hospital Kumi District Uganda were used, consultation of those experienced in the field of research was done to improve my research and my supervisor visited my work time to time.

5.1.3 Weakness

The sample size was insufficient and may affect the findings to other similar settings however the outcome variable was captured using sensitive tests and might be valid.

5.2 CONCLUSION

According to objective 1, malaria still remains a problem evidenced by a higher percentage.

According to objective 2, health related factors were not a contributing factor for malaria prevalence except for those affected.

According to objective 3, malaria vulnerability was trimester three, trimester two and least malaria occurrence was trimester one.

5.3 RECOMMENDATION

The researcher came up with the following recommendations from the study:-

5.3.1 The ministry of health

✚ The government should implement the policies introduced by the World Health Organization for malaria prevention and control during pregnancy in areas of stable transmission with emphasis on a package of intermittent preventive treatment and use of insecticide treated nets and ensure effective case management of illness and anemia. Insecticide treated nets and prompt effective case management must be recommended for all pregnant women living in malarious areas.

✚ There is need to come up with a way of co-coordinating information and education strategy. The ministry of Health needs a national strategy on information, education and behavior change communication with appropriate messages and strategies on malaria in pregnancy. The strategy would involve integrating Malaria prevention services in all health centers providing ANC services country wide.

5.3.2 District health team

✚ Government should endeavor to employ enough health workers in order to health educate the pregnant mothers in the community on the importance of preventive measures of malaria. Also to health educate them on the symptoms of Malaria in pregnancy, the management,

complications and the preventive measure of malaria in pregnancy in order to reduce its burden and complications in the community.

- ✚ There is need for health educators and counselors to study the problems of their client and to use such knowledge to impart appropriate Health education to the pregnant mothers.
- ✚ The government should employ more mid wives and doctors to cope up with the growing number of patients especially in the maternity department to alleviate the complications which are peculiar to child birth.

5.3.3 The Community

- ✚ Malaria in pregnancy kills faster the mothers and unborn baby.
- ✚ Therefore, prevention of malaria in pregnancy benefits should be published widely to all potential beneficiaries and popularizes it.
- ✚ The only option open for us is prevention since curing is very expensive relative to our economic standards.
- ✚ Therefore; opinion leaders and religious leaders should be involved in the prevention of malaria.
- ✚ The community must petition their elected leaders to demand from the government that proper health policies are implemented for the betterment of the common man

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APPENDICES

Appendix I: Consent Form

Study title “Prevalence of Malaria among Pregnant Women Attending Antenatal Care at Atutur Hospital Kumi District, Uganda”

My name is **AKOL TOPHISTAR** from the School of Allied Health Sciences, Kampala International University Western Campus, Ishaka, Busheny. I am conducting this study as a partial fulfillment for an award of Diploma in Clinical Medicine and Community Health. This form is meant to explain to you the important details of the study before you decide to take part and understand its purpose, how it may benefit you and risks involved. If you agree to participate in the study, you will be asked to sign this form.

This study aims to determine the Prevalence of Malaria in Pregnancy among pregnant women attending Antenatal Clinic at Atutur Hospital Kumi District Uganda between April and May 2017. Your participation in this study is entirely voluntary and you can withdraw from the study at any moment whenever you wish. If you accept to participate in this study, all your personal information obtained will be kept under lock and key.

Thank you for accepting to participate in this research on malaria in pregnancy and we wish you quick recovery and better health after your delivery.

Appendix II: Questionnaires

My name is **AKOL TOPHISTAR** and I would like to find out the “Prevalence of Malaria in Pregnant Women Attending Antenatal Care at Atutur hospital Kumi district Uganda”. Your participation is voluntary and the information you give is very confidential and important.

Research Number.....

NOTE: Tick the correct answer and write where necessary.

SECTION A: DEMOGRAPHIC DATA

1. Age (years) of the respondent 18-25.....26-35.....35-45.....

2. Marital status? Single..... Married.....Divorced.....

Others (specify).....

3. Educational level? Primary..... Secondary.....Tertiary..... None.....

4. Occupation? Civil servant.....Business.....Peasant farmer.....
others (specify).....

5. Religion? Catholic.....Protestant.....others (specify).....

SECTIONB: PROPORTION OF PREGNANT WOMEN WITH MALARIA

1. Is this your first pregnancy? Yes.....No.....

2. In this pregnancy have you suffered from malaria? Yes.....No.....

SECTIONC: TRIMESTERS OF MALARIA VULNERABILITY IN PREGNANCY

3. What trimester did you suffer from malaria in this pregnancy?

1st trimester.....2ndtrimester.....3rd trimester.....

SECTION D: MEASURES TAKEN TO PREVENT AND CONTROL MALARIA

1. Do you know any measures taken to prevent and control malaria Yes.....No.....

If yes specify?

2. Do you sleep under an insecticide treated mosquito net? Yes..... No.....

3. Have you received sulfadoxine–pyrimethamine (Fansidar) drug for preventive treatment during this pregnancy? Yes..... No.....

If yes; is it first dose.....or second dose.....

4. Is there any stagnant water next to your house? Yes.....No.....

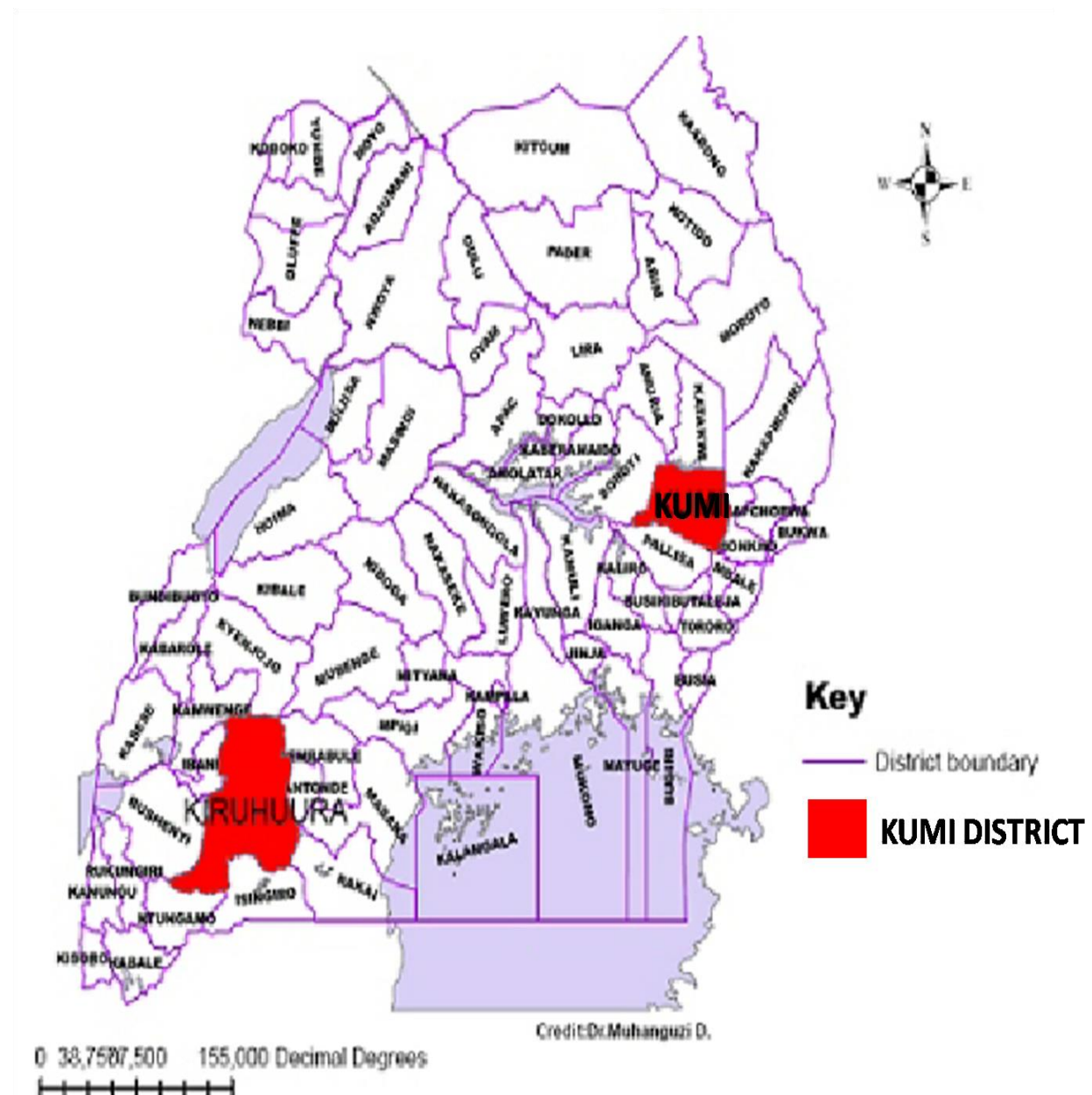
If yes what are you doing to remove stagnant water?

5. Are there any bushes around your home? Yes No.....

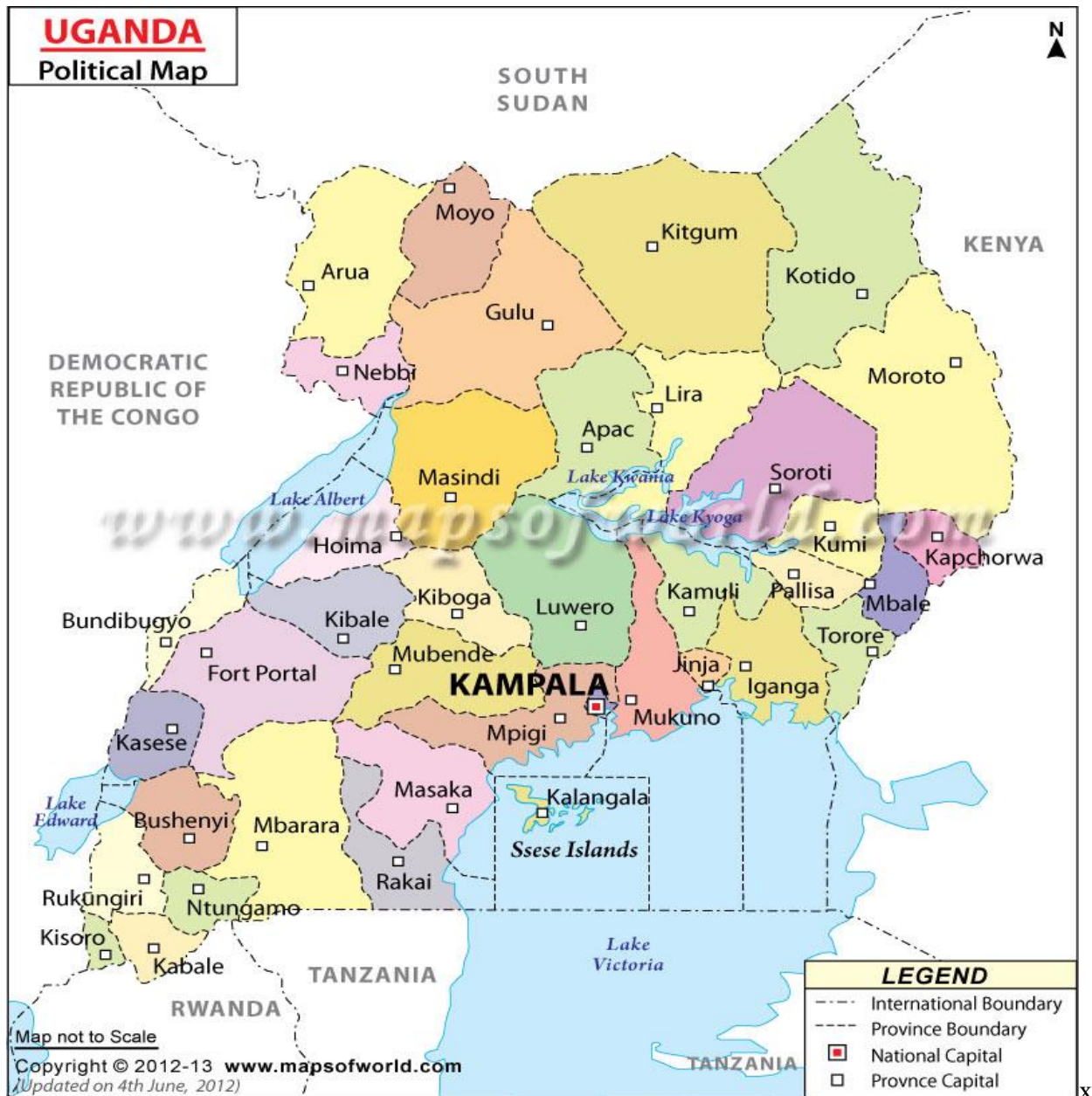
If yes what are you doing to clear them?

Thank You for Your Cooperation and May Almighty God Bless You.

Appendix III: Map of study area



Appendix IV: Map of Uganda.





KAMPALA
INTERNATIONAL
UNIVERSITY
TEACHING HOSPITAL

School of Allied Health Sciences (SAHS) Ishaka,
P.O. BOX 71 Bushenyi,
Tel: 0703786082/0773786082
Email: christinekyobuhaire@gmail.com

OFFICE OF THE ADMINISTRATOR - SAHS

Date: 12/05/2017

To: Administrator, Atutur Hospital

Dear Sir/Madam, Professor,

SUBJECT: DATA COLLECTION

Academic research project is an Academic requirement of every student pursuing a 3 year Diploma in Clinical Medicine & Community Health (DCM) of Kampala International University- Western Campus (KIU-WC). DCM program is housed in the School of Allied Health Sciences (SAHS).

The students have so far obtained skills in Proposal writing especially chapter one, Three & Questionnaire design. The student's topic has been approved by SAHS Research Unit and is therefore permitted to go for data collection along the full proposal & dissertation writing. As you may discover the student is in the process of full proposal development. However, the student MUST present to you his/her questionnaire and his/her research specific objectives that he/she wishes to address. We as academic staff of Allied Health Sciences are extremely grateful for your

support in training the young generation of Health Professionals. I therefore humbly request you to receive and allow the student Akol Tebhistar Reg. No. BCM/0079/143159 in your area/hospital to carry out his/her research. His/her topic is hereby attached. Again we are very grateful for your matchless support and cooperation.

Topic: Prevalence of Malaria Among Pregnant Mothers Attending Antenatal Care at

Atutur Hospital Kumi District Uganda

Sincerely yours

Christine Kyobuhaire, Administrator- SAHS

CC: Dean SAHS

CC: Associate Dean SAHS

CC: Coordinator, Research Unit- SAHS

CC: H.O.D Dept. Public Health

CC: H.O.D Laboratory Sciences

CC: Coordinators; TLC & DEC

I
PERMISSION
GRANTED.
Head ANC DSE
accord all the
necessary help.

"Exploring the Heights"

MINISTRY OF HEALTH
ATUTUR HOSPITAL
KUMI DISTRICT

DATE

OPEN HOSPITAL ADM
22/5/17