PREVALENCE OF MALARIA IN PREGNANCY AMONG WOMEN ATTENDED ANTENATAL CARE AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL

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NOVEMBER 2013

DECLARATION

I, Frank Elisha, registration number*:* BMS/25/81/DF, declare that this dissertation titled "prevalence of malaria in pregnancy among women attended antenatal care at kampala international university teaching hospital" is the original record of project work I carried out under the supervision of Dr. Chris Oyoo and has never been submitted to any other University or Institution of higher learning for scrutiny for the purpose of an academic award.

Signature……...…..Date……

CERTIFICATION

I, the undersigned declare that this thesis titled:

PREVALENCE OF MALARIA IN PREGNANCY AMONG WOMEN ATTENDED ANTENATAL CARE AT KAMPALA INTERNATIONAL UNIVERSITY TEACHING HOSPITAL

is the original record of project work carried out by

Frank Elisha, registration number*:* BMS/0025/81/DF

and has been examined and accepted in partial fulfillment of the requirements for the

award of the degree of

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY

in the

Faculty of Clinical medicine and dentistry of

Kampala International University.

SUPERVISOR: DR. OYOO, CHRIS O SIGN…..……..DATE…….....

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Malaria infection during pregnancy is a major public health problem in tropical and subtropical regions throughout the world. Malaria in pregnancy is caused by plasmodium species, which include plasmodium falciparum, plasmodium ovale, and plasmodium vivax. Africa south of sahara bears 90% of the global malaria burden. Every year at least 24 million pregnancies occur among young women, in endermic areas of Africa, yet less than 5% of pregnant women have access to effective interventions.

Plasmodium species infection during pregnancy increases the chances of maternal anemia, abortion, stillbirth, prematurity intrauterine growth retardation, and infant low birth weight. Malaria has been estimated to cause 80% to 14% of all low birth weight babies and 30% to 80% of all infant death in areas of Africa with stable malaria transmission. In terms of its effects on mothers, severe anemia increases the risk for maternal mortality, and malaria anemia is estimated to cause as many as 10,000 maternal death each year in Africa *(www.**bu.edu/…/prevalence-of-malaria**-among-pregnant-**women)***

In Uganda, malaria accounts for 25-40% of all outpatient attendances, 20% of all admissions and 14% of all in-patient deaths (*Uganda ministry of health*). Because of the impact malaria has on morbidity and mortality in Uganda, effective malaria treatment is a top priority of the Ministry of Health. Early diagnosis and prompt treatment of malaria cases are important to effective malaria case management. The National Anti-Malaria Policy stresses the importance of recognizing symptoms of malaria and treating within 24 hours after the onset of symptoms or a positive malaria test to prevent the development of the severe and complicated malaria. The Ministry of Health emphasizes the importance of effective malaria case management for everyone and particularly for children under 5 and pregnant women who are more at risk of complications of malaria. Today, Uganda faces new challenges for malaria treatment because of increasing resistance of malaria parasites to Chloroquine (CQ) and Sulfadoxine / Pyrimethamine (SP). New and highly effective drugs have been introduced at both the public and private facilities.

The National Malaria Control Program is committed to controlling malaria in pregnancy through the Minimum Health Care Package outlined in the Malaria in Pregnancy Control Strategic Plan. The three key components of the strategy are: intermittent preventive treatment (IPT), early diagnosis and prompt case management, and consistent insecticide treated net use for expectant mothers before, during, and after pregnancy.

At KIUTH (Kampala International University Teaching Hospital) it has been involved toward giving antenatal care services to pregnant women, and several times open dialogue to discussion concerning malaria in pregnancy, and going into the outreaches (communities) to offer education about malaria in pregnancy.

1.2 RESEARCH PROBLEM

Malaria probably is the most known disease among peoples in community. Because of its publicities, educations and countless programmes, funds, resources and numbers of research done toward it, however the figures of pregnant women affected with malaria and communities in general are surprisingly not decreasing and instead keep on increasing. This could be because of how closely our environment and life style related as risk factors toward causing malaria. Its true that many of absenteeism in school and work place most of the time is due to malaria. Therefore, there is a reason why we should assess the prevalence and risk factors in our communities and try to understand why malaria has remained a problem and among diseases leading in mortality in pregnant women and children below age of 5years despite the richness in knowledge and countless programmes to eradicate malaria.

1.3 RESEARCH QUESTIONS/ HYPOTHESIS

The study will test the hypotheses that,

- What are the number of cases of malaria in pregnancy between October 2012 to September 2013?

- What are the risk factors that influence distribution of malaria in pregnancy?
- How can we ascertain the knowledge of the women attending KIUTH about the effect/danger of malaria in pregnancy?
- What is the prevalence rate of malaria in pregnancy?

1.4 STUDY OBJECTIVES

1.4.1 MAIN OBJECTIVE

To assess the prevalence and risk factors, among pregnant women attending antenatal care at Kampala International University Teaching Hospital.

1.4.2 SPECIFIC OBJECTIVES

- To identify the number of case of malaria in pregnancy between October 2012 to September 2013 attended to KIUTH
- To identify the risk factors that influences the distribution of malaria in pregnancy
- To determine the prevalence rate of malaria in pregnancy in KIUTH
- To compare the prevalence rate of malaria at KIUTH to that of Africa WHO statistics.

1.5 SIGNIFICANCE OF THE STUDY

The study will lay a foundation for future medical research concerning malaria in pregnancy at KIUTH. The study is of great importance to investigate the prevalence rate and risk factors of malaria in pregnancy at KIUTH. The information ascertained to the study will guide the public as regards to saving lives of pregnant women.

The study of this work will expose the risk factors and control measures for malaria attack and the awareness will be very important to the pregnant women in antenatal clinic, and the public as

whole at Ishaka. This is because it will help them to take adequate precautions to prevent rather than treat malaria.

It's my hope the study, will help the limited resources the government put into health care to be used effectively. As the study will look into how to prevent malaria in pregnancy, so that many pregnant women will be free of malaria, therefore prevalence and incidence reduced consequently the funds on medications will be reduced. Therefore allowing allocation of the funds to other health care problems like tuberculosis, research on cancers ect.

1.6 THE PURPOSE OF THE STUDY

To assess the prevalence of malaria in pregnancy in the community so as to come up with recommendations on how to reduce incidence of this disease as it has a lot of complication to the mother and child, and therefore persuade the community and hospital.

CHAPTER TWO

LITERATURE REVIEW

CONCEPT OF MALARIA

Malaria, a life threatening parasitic disease has been known since time immemorial. Previously, it was thought that "miasma" (bad air gas from swamps) causes malaria. This is among many misconception theories about malaria. Malaria is transmitted by female anopheles mosquitoes. Malaria is the most highly prevalent tropical disease, with high morbidity and mortality as well as high economic and social impact (*WHO, 2001*)

According to the WHO in 2003, malaria remains one of the most important threats to the health of pregnant woman and their new born. Since control is one of the most challenging in Africa where 45 countries, including Uganda are endermic for malaria, and about 588 million people are at risk *(WHO*). The protection of pregnant women living in malaria endermic countries has been of peculiar interest to many National malaria control programmes because of their reduced immunity. This is not unconnected to the fact that malaria during pregnancy presents a unique problem. Pregnant women are at higher risk of developing severe and fatal malaria because normal immune responses are reduced during pregnancy.

PREVALENCE OF MALARIA

Malaria has been known to be a cause of a worldwide infection especially in children and pregnant women (*ALO, 2001).* In Uganda epidemiological work, show that, prevalence of placental infection with Plasmodium falciparum malaria in pregnant women can be as high as 62.1% in some areas (*Ndyomugyenyi et al, 1999*). Although all pregnant women may be at risk of malaria, its complications are greatest in those with modified immunity such as primigravidae, secundigravidae, adolescents, immigrants/visitors from non-endemic areas and those infected

with HIV. In Uganda, malaria accounts for 25-40% of all outpatient attendances, 20% of all admissions and 14% of all in-patient deaths.

EFFECTS OF MALARIA DURING PREGNANCY

Malaria in pregnancy is an obstetric, social and medical problem requiring multidisciplinary and multidimensional solution. Pregnant women constitute the main adult risk group for malaria and 80% of deaths due to malaria in Africa occur in pregnant women. In Africa, prenatal mortality due to malaria is at about 1500/day (*WHO*).

Malaria during pregnancy reduces birth weight. (less than 3kgs for new born babies) this could lead to premature death of the neonate. It's regarded as the major determinant of infant mortality (*American journal of Epidemiology 2001*)

Malaria also cause severe anemia in pregnant women, especial in primigravidae. For these reasons, it's generally advocated that women living in a malaria endermic areas should be given prophylaxis during pregnancy even when they are partially immune. Other effects associated with malaria to the mother include, hypoglycemia, cerebral malaria, puerperal sepsis and mortality in severe cases. To the child, include prematurity, intra uterine growth retardation, malaria illness and mortality.

CAUSES OF MALARIA

Malaria is a protozoa disease caused by infection with parasite of the genus plasmodium transmitted though the bite of infected mosquito. There are four types of plasmodium species (falciparum, ovale, vivax and malariae) most serious one is plasmodium falciparium. Malaria can also be transmitted through blood transfusion, contaminated needles and syringes and from mother to fetus.

DIAGNOSIS OF MALARIA

Malaria can be diagnosed by signs and symptoms of malaria, smear microscopy which determine the presence and quantity of malaria parasite. Other test include polymerase chain reaction (PCR) normally done in researches or if the result of microscopy are ambiquous.

CONTROL OF MALARIA DURING PREGNANCY

The Ministry of Health Guidelines for malaria in pregnancy includes Intermittent Preventive Treatment (IPT) which, has been proven as a safe and effective method for reducing malaria among pregnant women. The current IPT policy states that all pregnant women - even if they do not have fever or other signs of malaria- should take 3 tablets of Sulfadoxine-Pyramethamine (SP) once between 4 and 6 months of pregnancy and 3 SP tablets between 7 and 9 months. Pregnant women infected with HIV should take 3 doses of SP 1 month apart or stay on cotrimoxazol (e.g. Septrin) (*Uganda Health Ministry*).

Malaria can be prevented by minimizing vector – human contact and to treat malaria disease promptly. Control by using mosquito net, clearing breading places of mosquitoes, screening of doors and windows and insecticides sprays.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

The study methodology describes the methods that will be used, study design, sample size determination, study population and data collection tools. It also explains the sampling methods, pre-testing data and ethical consideration analysis.

3.2 STUDY AREA

Kampala international university teaching hospital was the area of study because it is a regional referral hospital, in western Uganda and is situated in a densely populated area and large catchment area and has improved obstetric care and facilities.

3.3STUDY DESIGN

A cross-sectional retrospective study was conducted using Kampala international university teaching hospital obstetric department records of patients who were diagnosed with malaria in pregnancy, from 1st January 2013 to 30th September 2013.

3.4 STUDY POPULATION

All patients who were diagnosed with malaria in pregnancy at Kampala international university teaching hospital between 1st October 2012 to 30th September 2013.

3.5 SAMPLING TECHNIQUE AND SAMPLE SIZE

All patients who were diagnosed with malaria in pregnancy at Kampala international university teaching hospital between 1st October 2012 to 30th September 2013. Sample was collected from department of Obstetric and Gynecology records of patients at KIUTH.

3.6 DATA COLLECTION PROCEDURE

Records of patients who were diagnosed with malaria in pregnancy at Kampala international university teaching hospital between 1st October 2012 to 30th September 2013 was obtained. Data collection tool was developed to capture all the information that this study intent to address.

3.7 DATA ANALYSIS

Data was analyzed using micro soft excel, calculators and presented in form of pie charts, tables, percentages and bar graphs.

3.8 INCLUSION AND EXCLUSION CRITERIA

All patients who were diagnosed with malaria in pregnancy at Kampala international university teaching hospital.

3.9 ETHICAL CONSIDERATION

Letters were obtained from the KIU Research and Ethics Committee and from faculty of clinical medicine and dentistry, Kampala International University-Western Campus. Addressing the head of obstetric department to grant me permission to access patient's record.

CHAPTER FOUR

RESULTS

4.1 0VERVIEW

This chapter presents results of qualitative and quantitative findings. The section covers the following findings, the prevalence of malaria in pregnancy to the total number of patient visited antenatal care and obstetric outpatient department at KIUTH and also include all patient who were admitted at Obstetric and Gynecology wards between October 2012 to September 2013.

The total number of patient visited antenatal care and obstetric outpatient department at KIUTH were 1563 patients, out of that only 36 patients were found with low hemoglobin level and positive to malaria parasites as per laboratory results indicated, this shows only 2.30% of prevalence of malaria in pregnancy among patients attended antenatal care during that time. So the prevalence of malaria in pregnancy is at ratio of approximated 2 patients to 100 pregnancy women (2:100). Majority of this patient were primigravida 22 out 36 patients. A percentage of 61% among the patients.

While for inpatient department, the total number of patient admitted in obstetric ward were 1032 patients, out of that. Only 42 patients, the working diagnosis was malaria in pregnancy. Majority of these patients also had Urinary Tract Infections (UTI) treated together with malaria. Therefore prevalence of malaria during this time was 4.10% among patients who were admitted. This gives us the ratio of 4 patients to 100 pregnancy women (4: 100) who were admitted. Majority of the patients were primigravida 32 out of 42 patients indicating a percentage of approximated 76%.

TABLE 1: INDICATE MALARIA CASES PER MONTH COMPARE TO TOTAL NUMBER OF PATIENTS WHO VISITED ANTENATAL CARE

MONTH	TOTAL PATIENTS	MALARI IN PREGNANCY CASES
OCTOBER 2012	135	3
NOVEMBER 2012	94	0
DECEMBER 2012	128	2
JANUARY 2013	154	4
FEBRUARY 2013	133	6
MARCH 2013	116	1
APRIL 2013	140	3
MAY 2013	113	4
JUNE 2013	87	1
JULY 2013	140	3
AUGOST 2013	156	7
SEPTEMBER 2013	167	2
TOTAL	1563	36

The table above is summary of all patients and number of malaria in pregnancy cases at KIUTH hospital between October 2012 to November 2013 as per ANC records.

FIGURE 1: ANTENATAL CARE STATISTICS OF MALARIA CASES AND NUMBER OF PATIENT BETWEEN OCT.2012 TO SEPT. 2013

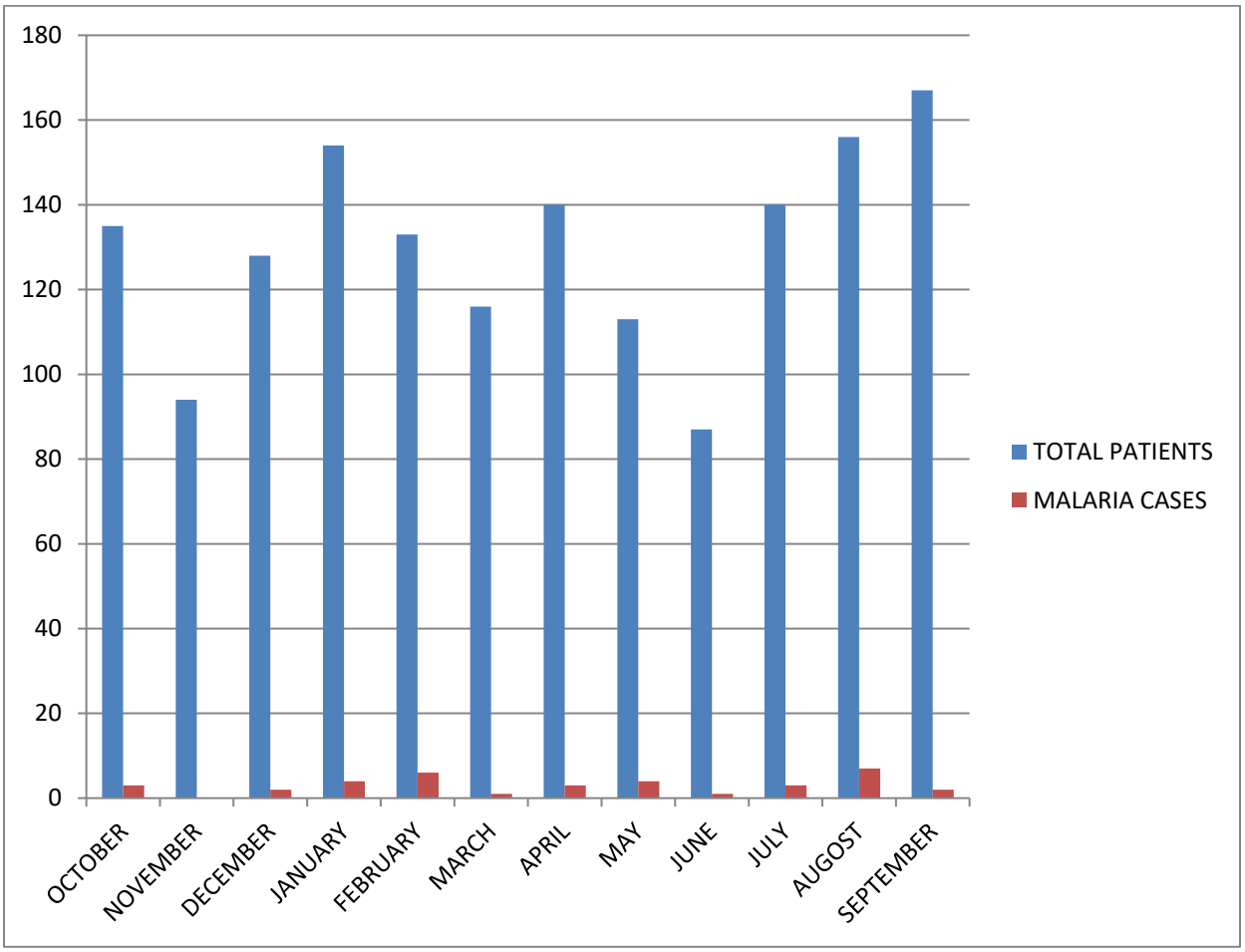
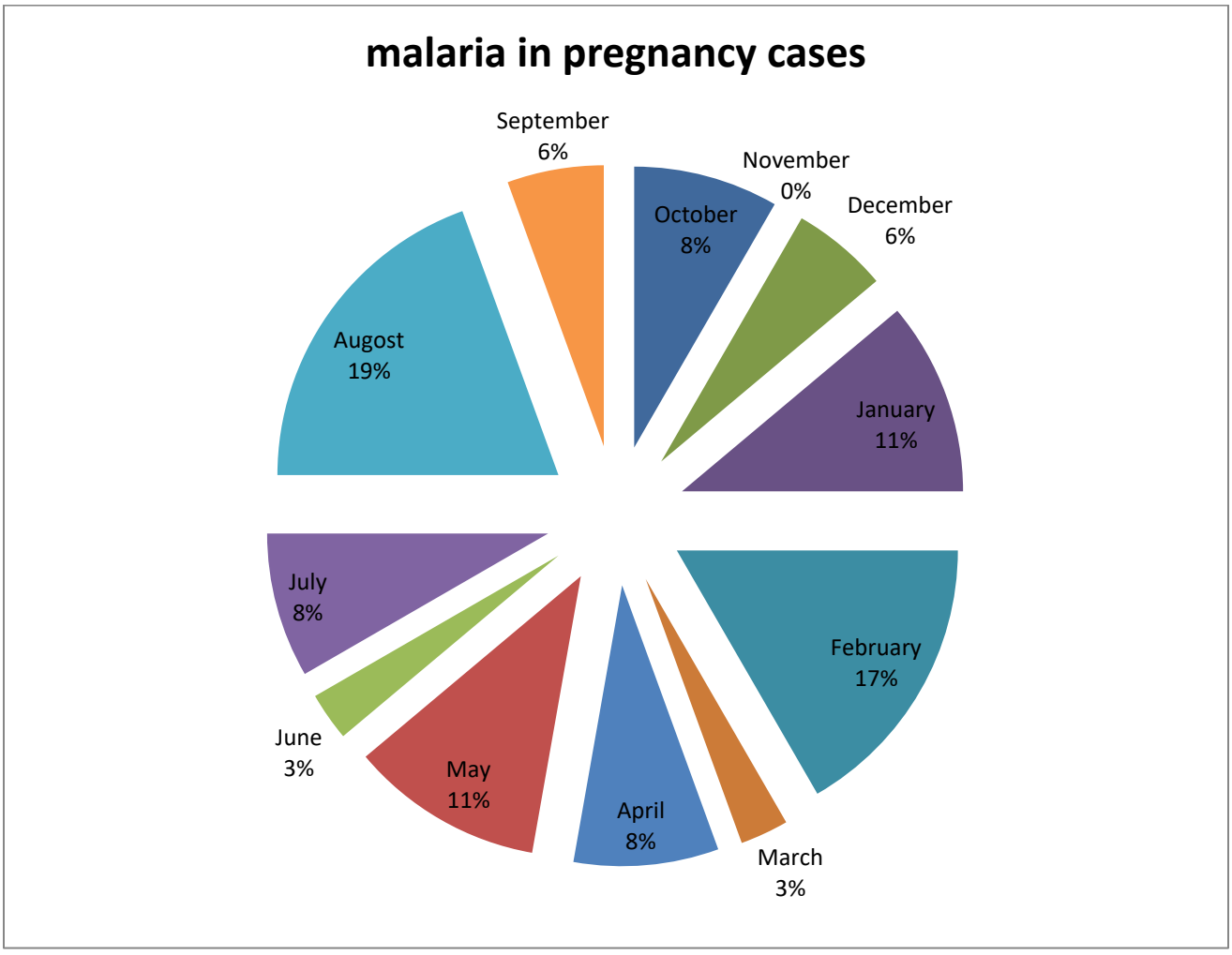


Figure1. Above indicate few cases of malaria in pregnancy cases as per particular month compare to number of patients attended antenatal care during that time. In February there was no malaria case at all.

FIGURE 2: INDICATING PERCENTAGE OF MALARIA CASES PER MONTH AS PER ANTENATAL CARE RECORDS



According to the figure 2 above august had a higher number of malaria cases, followed by February 2013.

During Augost and February in Uganda, is season of fairly rain and warm days.

For patient who were admitted in the ward

TABLE 2: INDICATE MALARIA CASES PER MONTH COMPARE TO TOTAL NUMBER OF PATIENTS WHO WERE ADMITTED IN THE WARD

MONTH	TOTAL PATIENTS	MALARI IN PREGNANCY CASES
OCTOBER 2012	87	3
NOVEMBER 2012	79	2
DECEMBER 2012	103	6
JANUARY 2013	82	1
FEBRUARY 2013	73	3
MARCH 2013	90	5
APRIL 2013	85	3
MAY 2013	86	3
JUNE 2013	79	5
JULY 2013	75	5
AUGOST 2013	101	4
SEPTEMBER 2013	92	2
TOTAL	1032	42

The table above is summary of all patients and number of malaria in pregnancy cases at KIUTH hospital between October 2012 to November 2013 as Obstetric ward records.

FIGURE 3: OBSTETRIC WARD STATISTICS OF MALARIA CASES AND NUMBER OF PATIENT BETWEEN OCT.2012 TO SEPT. 2013

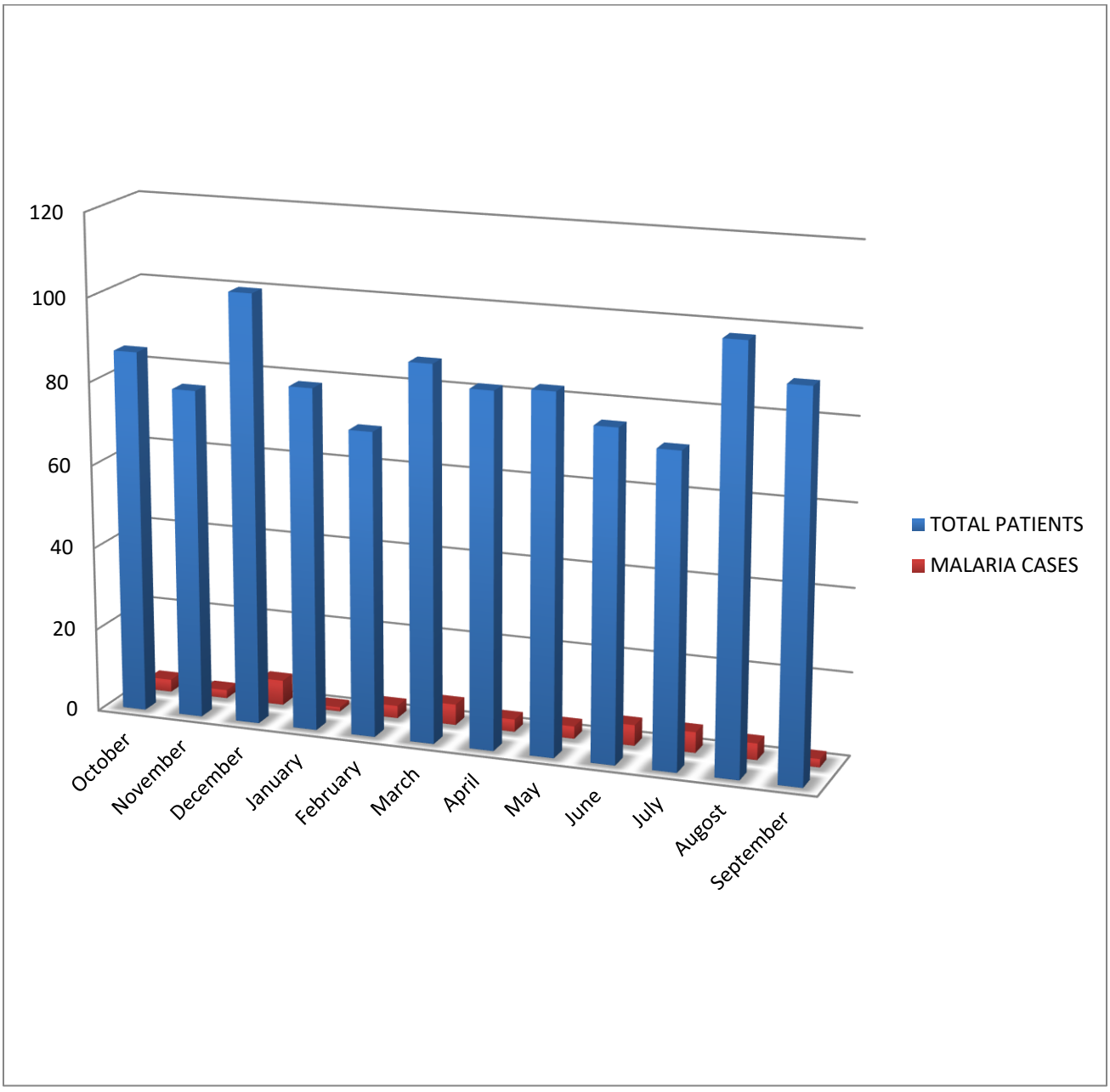
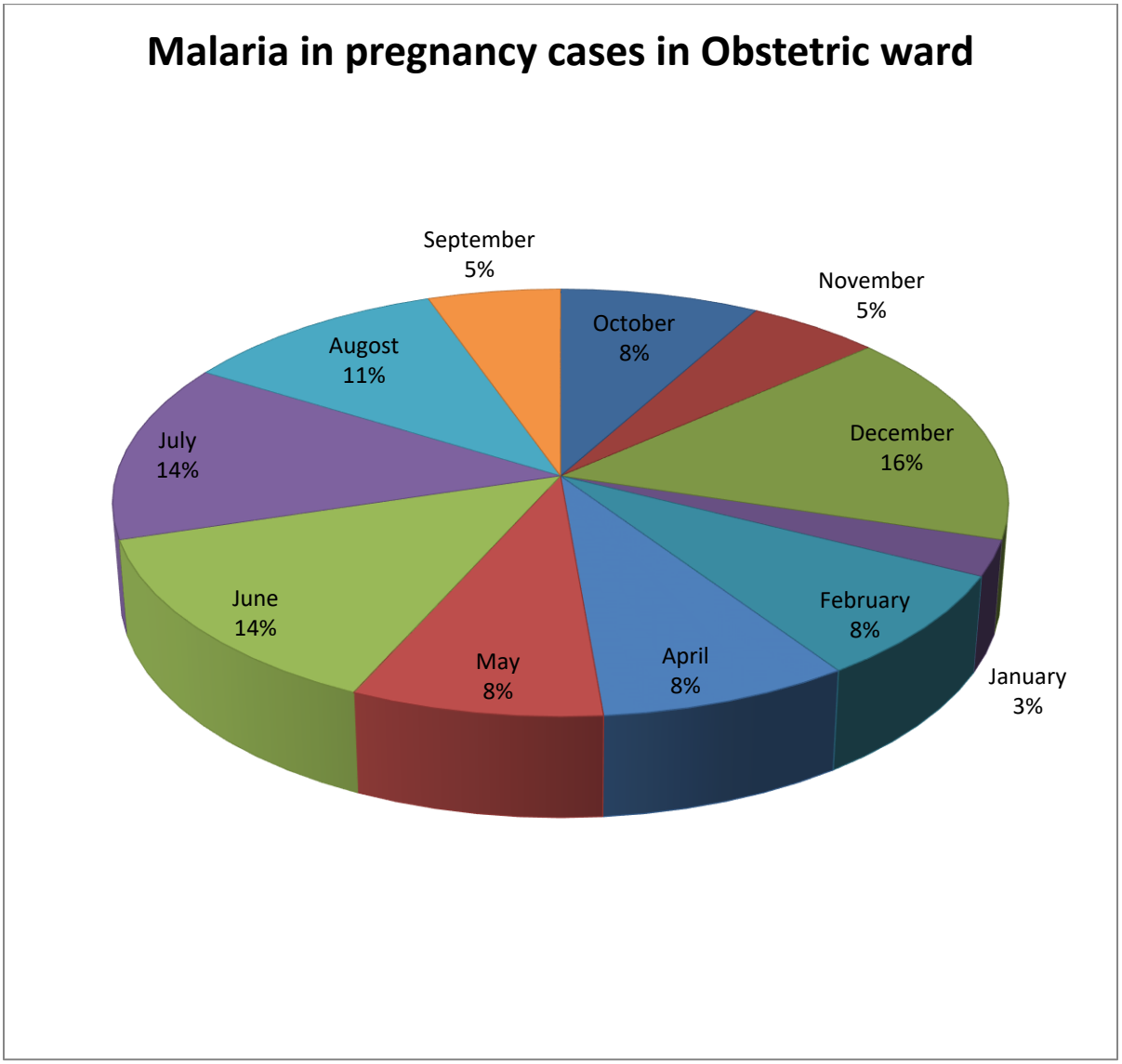


Figure1. Above indicate few cases of malaria in pregnancy cases as per particular month compare to number of patients who were admitted during that time.

FIGURE 4: INDICATING PERCENTAGE OF MALARIA CASES PER MONTH AS PER OBSTETRIC WARD RECORDS



According to the figure 4 above December had a higher number of malaria cases, followed by July and June 2013.

Looking at age distribution of malaria in pregnancy between 15years to 24, 25years to 34 and 35years and above.

TABLE3: SHOWING AGE DISTRIBUTION OF MALARIA IN PREGNANCY CASES

AGE DISTRIBUTION	Antenatal care	Obstetric ward
15-24 years old	22	32
25-34 years old	13	10
35 and above	1	0

Figure 5: SHOWING COMPARISON OF PRIMIGRAVIDA AND OTHER CONSEQUENCE PREGNANCY IN RELATION TO MALARIA IN PREGNANCY CASES

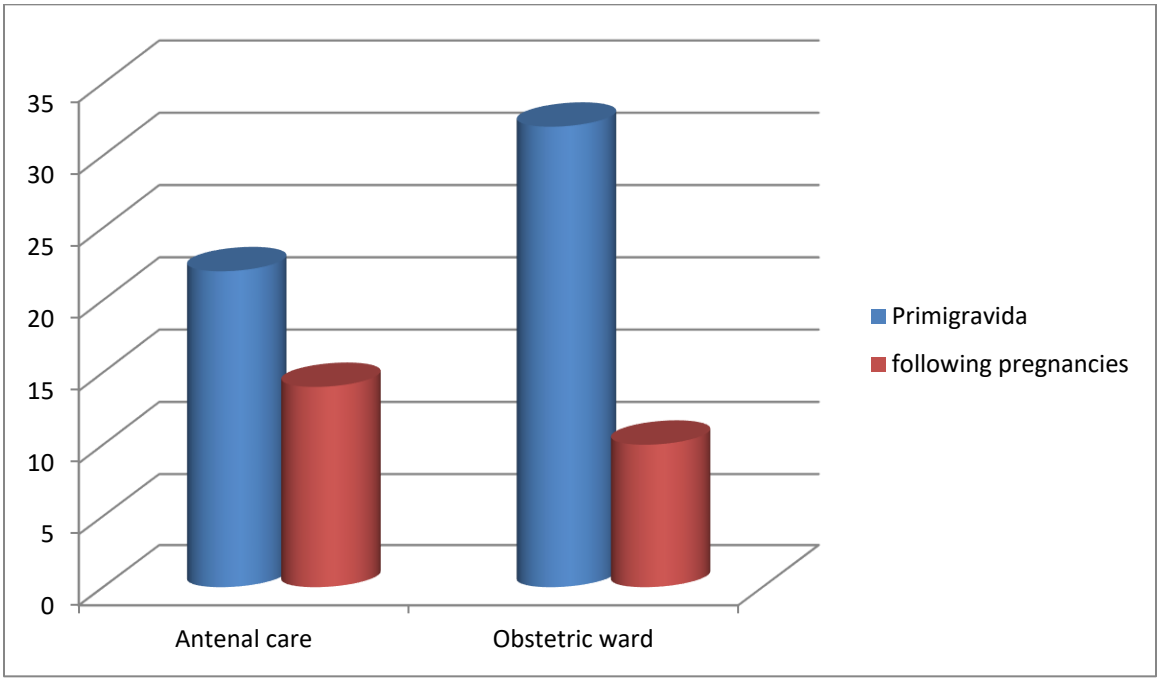


figure 5: Indicating cases of malaria in primigravida are higher than consequence pregnancies

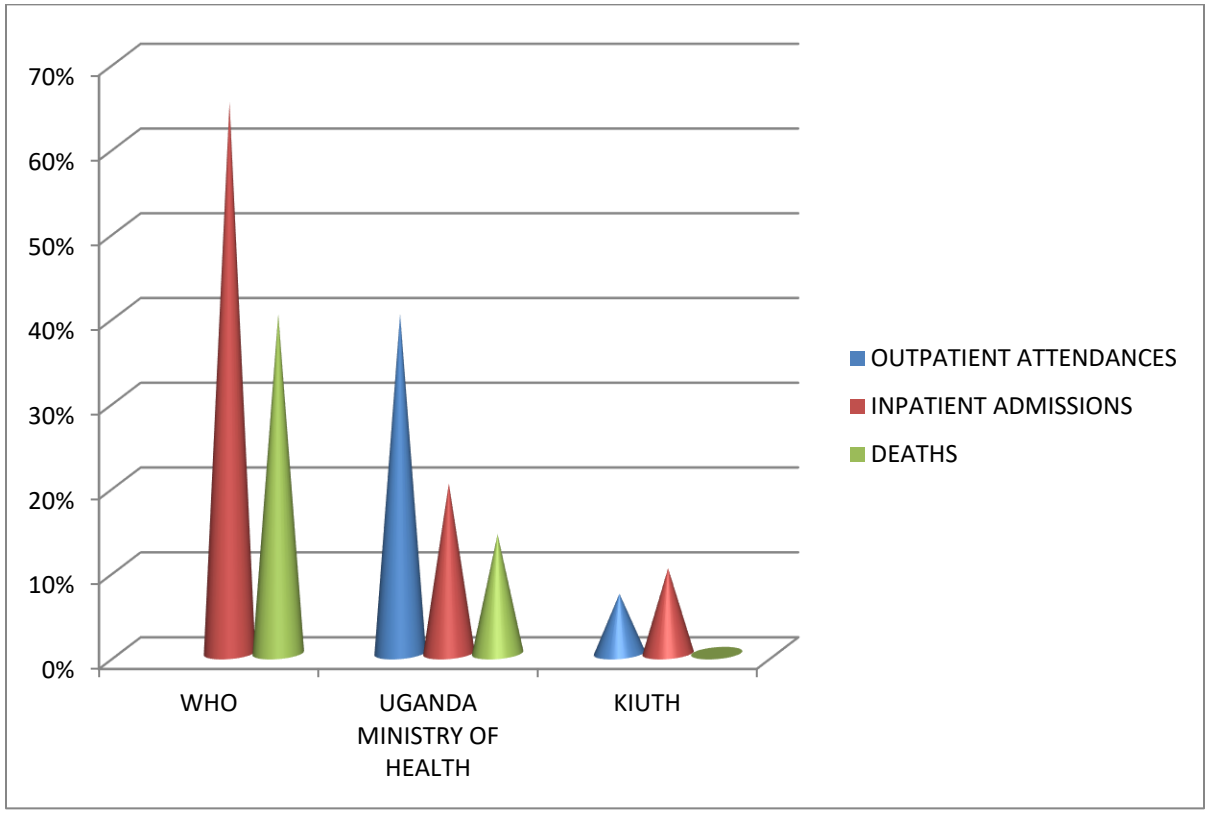
COMPARISON BETWEEN UGANDA STATISTICS AND KIU TEACHING HOSPITAL STATISTICS OF PREVALENCE OF MALARIA IN PREGNANCY

KIUTH statistics of prevalence of malaria is as per October 2012 to November 2013 records. And Uganda statistics is as per 2010 records by Uganda Ministry of Health.

In Uganda, malaria accounts for 25-40% of all outpatient attendances, 20% of all admissions and 14% of all in-patient deaths *(ministry of health*).

According to KIUTH statistics I did, malaria in pregnancy account for 2 to 7% of all outpatient attendances, 3 to 10% of all admission and 0% of all in patient deaths. According to WHO statistics, 65% account for admission among malaria cases, 40% account for all death in malaria in pregnancy in Africa (*WHO 2006*)

FIGURE 6; SHOW COMPARISON OF MALARIA IN PREGNANCY AT KIUTH AND OTHER STATISTICS BY UGANDA MINISTRY AND WHO



The figure above indicating cases of malaria in pregnancy at KIU are very few, with no mortality at all compared to Africa and national wide statistics.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 INTRODUCTION

This chapter contain results which were taken through cross sectional retrospective study, that is the results were recorded according to KIUTH records through outpatient and inpatient of Obstetric and Gynacology department.

5.2 PREVALENCE OF MALARIA IN PREGNANCY AT KIUTH

I have to admit I was expecting more compared to the results I obtained. During October 2012 to September 2013 total number of cases were 42 out of 1032 admissions and 36 out of 1563 outpatients visits. Making a prevalence of 4.10% admissions and 2.30% outpatients visits. An approximated ratio of 4 to 100 patients in Obstetric and Gynacology department.

These numbers of cases of malaria in pregnancy although surprisingly low but have reasons, which are the followings.

KIUTH is a referral Hospital and it's surrounded by Ishaka Adventist Hospital, Health centre IV hospitals for example Bushenyi, Kyabugimbi, Mitoma and others. There are also private clinics like BB Clinics and many others. So KIUTH being referral Hospital in Ishaka, and surrounded by many of above mentioned hospitals which also offer antenatal care services, you would expect low number of cases in malaria in pregnancy at KIUTH, because most of this cases don't require referral and can be managed at health centre IV levels very well.

Education is the one of major reasons. A lot of campaigns have been made towards educating the community about malaria. It's causes, prevention and even its mortality level. So the people in the community in Ishaka are well aware of malaria. Preventive measures are highly followed by most of the people. For example sleeping under mosquito nets.

Malaria prophylaxis in pregnancy women is one of the reasons. Many women during pregnancy are required by Uganda ministry to be given malaria prophylaxis for prevention of malaria. many pregnant women have responded positively to this calling. Therefore automatically reduces incidence of malaria in pregnancy. The number of patients attending antenatal care is evidence how much the people in community have responded, and willing to obtain malaria prophylaxis during pregnancy.

Weather at Ishaka ranges between 26 to 28 degree centigrade during warm days and 23 to 27 during cold days. Malaria belt region temperatures is between 27 degree centigrade and above. Although the weather environment has no big difference but Ishaka has advantage of cold

weather most of the time. Therefore making difficult for anopheles mosquitoes to breed and grow in this area compare to other malaria endemic region.

5.3 CONCLUSION

Based on the study results, the prevalence of malaria in pregnancy is low, compared to 2006 WHO statistics and 2010 Uganda ministry statistics. This means education about malaria, malaria prophylaxis and other preventive measures which have been campaigned throughout are start yielding the results. But I would like to argue for the future researchers to extend their study area of this matter, as the actual picture of prevalence of malaria will be seen if all the Hospitals in Ishaka will be involved in the study. Before we get carried away by the prevalence seen in only one Hospital in the community.

Therefore the response of the community toward fighting malaria as an enemy of health has reach a point of success, 0% mortality rate at KIUTH, I do believe the reduction of prevalence of malaria in pregnancy at KIUTH can also be seen in other hospitals around Ishaka.

So I would like to conclude by saying, the Nation activities and development depend on health of its citizen, so if the community in Ishaka and Uganda as whole keep fighting to eradicate malaria the productivity of the country will increase, the risk of mortality to pregnant women and their unborn childlren, infants and children below age of five will decrease. Therefore limited resources will be directed to other developmental issues and health services charges which are punishable to every member in the community will decrease.

5.4 RECOMMENDATIONS

Based on the study results, I would like recommend the following

Future researchers in this study, should involve if possible all the hospitals in Ishaka. This will give the government the actual picture toward the goal of minimizing and eradicate malaria, proper planning of resources may be made, as per now there is no a recent published researched document of this study which was done only in Ishaka.

The government should continue funding programmes and campaigns which educate people in the community about health matters, including malaria in pregnancy especial in rural areas where many people have no access to internet, news papers or available health services. So that the education about prevention malaria and other diseases will be learnt and practiced, since the back bone of the development in rural areas is agriculture, and the government wouldn’t like the little the people do to conquer their poverty being taken malaria and it’s mortality.

KIUTH should emphasize on the stuff and students to participate effectively when the go into the communities (outreaches) to benefit also the members of these communities by sharing the knowledge about malaria in pregnancy and other health problem. Instead of students remaining in the hospitals of these communities only seeing the patients and discuss diseases/cases with their lectures.

Since the health services cost are punishable to every member in the community, considering Uganda is developing country and many people live in less than a dollar per day. Where possible the government should provide a financial aid by giving/ offering health services free or with little payment, as many people are dying because they can't afford the health services charges.

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Map of Uganda showing where Ishaka is geographical, its within bushenyi district. West of Mbarara


RYABAGOMA
NYANGA
KITOZHO
RUBUZIGYE
NYAKABINGO
ENENGO
BUGALAMA
KIBINGO
KAKANZHU
RUTOKYE
NYARUTOMA
NYAKISHOZO
ISHAKA
NYAKABANGA
BUGOMORA
BWERANYANGI
KAYANTA
NYAHMENGO
NYABUBALE
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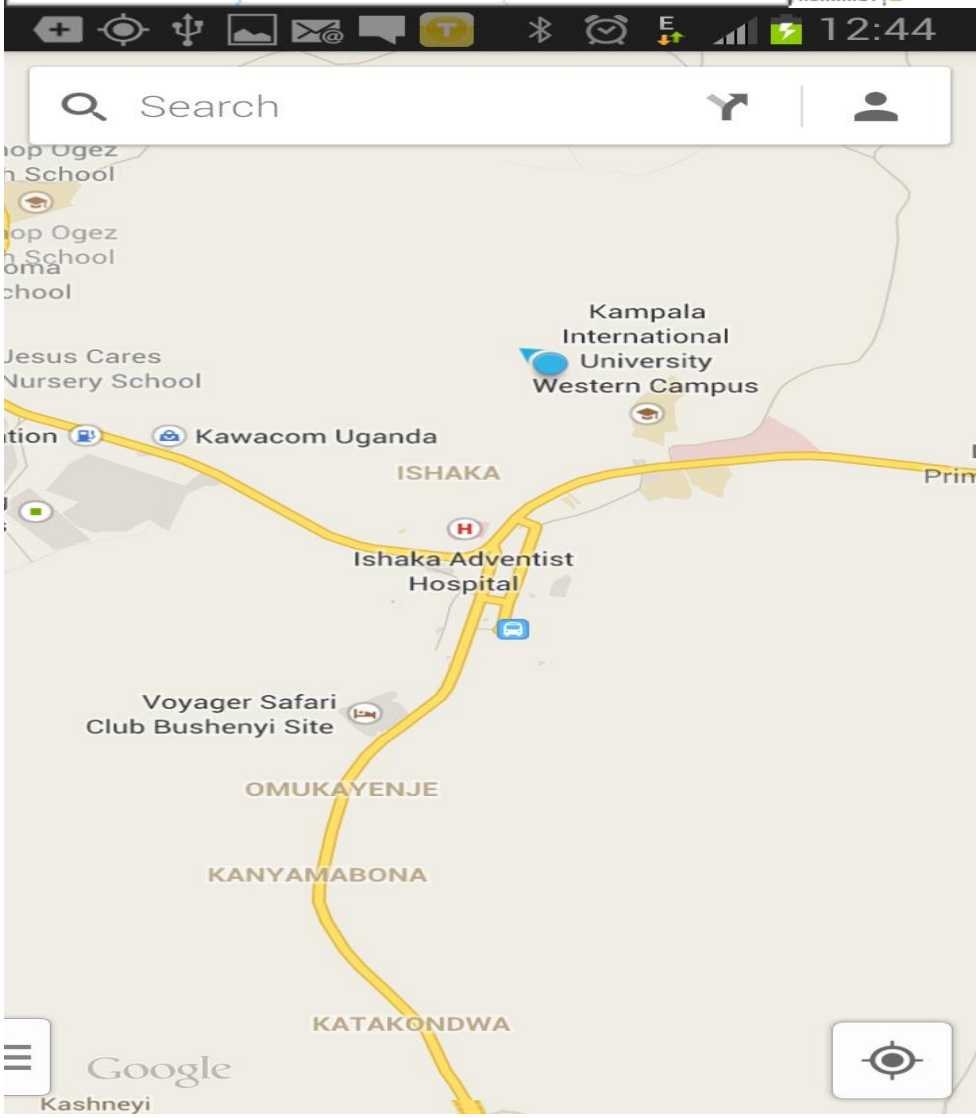
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