



IMPACTS OF MALARIA ON PREGNANT WOMEN LEAD TO MATERNAL DEATH IN MANGOCHI DISTRICT

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ABSTRACT

Introduction: Malaria in pregnancy is a significant cause of maternal mortality. Malawi is one of the countries in Sub-Saharan Africa with the largest burden of malarial disease, with over 90% of the world's malaria related deaths occurring in this region. Twenty five million pregnant women are currently at risk for malaria and with malaria accounts for over 10,000 maternal deaths per year. Mangochi being one, the district were cases of Malaria are very high, this mainly due to the presence of stagnant pools of water. Pregnant women are most affected with Malaria because pregnancy reduces women's immune system and making them more harm to malaria infection and increasing the risk of illness such as severe anemia which easily led to maternal death. **Aim:** The main objective of present study was to gain insight of impact of Malaria on pregnant women and how it has led to maternal death. **Methodology:** The study was carried out in several hospitals in Mangochi district. 10 health workers were randomly sampled, required data was drawn from primary and secondary sources and in addition data was collected using a questionnaire as a collection tool. **Results:** The study reveals that, malaria in pregnancy is caused by Plasmodium with 46.7%, 40% mosquito and some respondents said that pregnant women suffer from malaria because they report late for antenatal clinics which are very important for their health as well as the unborn child. **Discussion and Conclusion:** Malaria mainly affects women's health and community. The government has taken part in reduction of maternal due malaria by supporting up with policies and programs that focus on malaria prevention and maternal reduction. Despite these efforts taken by government in improving maternal health, the Mangochi district hospital and non-governmental organizations should tackle the problem from the grass root level in terms of improving women's living standards. The hospital management should encourage relationship between health personnel and pregnant women seeking health service.

1. INTRODUCTION

Malaria is the life threatening disease caused by parasites that transmitted to people through the bites of infected mosquitoes. In the human body, the parasites that transmitted to people through the bites of infected mosquitoes and parasites multiply in the liver and then affect blood cells. Malaria is one of the problems worldwide. It is a leading cause of death and disease in many developing countries where young children and pregnant women are the groups most affected according to the WHO world Malaria report (2015). Malaria is one of threatening disease in Malawi. It is characterized by recurrent episodes of chills, fever, sweating and anemia and is very common in Sub-Saharan Africa. The infection is transmitted by female mosquito, therefore factors that influence mosquito breeding such as temperature, humidity and rainfall affect malaria incidence. Pregnant women are more prone to malaria than any other group due to low immunity. Approximately 38% of women are anemic during pregnancy and up to 40% of women pregnant for the first

or second time have placental malaria at the time of delivery. This results in an increased incidence of complications and maternal rates (CDC, 2009).

According to International Classification of Diseases and Health Related conditions, a maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy from any course related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (Ian & Uzonna, 2015). Medical causes of maternal deaths may be by direct and indirect obstetric deaths. Direct obstetric deaths are those arising from obstetric complications of pregnant state (pregnancy, labor and the post-partum period), from any interventions, omissions, incorrect treatment. Indirect obstetric deaths are those resulting from previously existing disease or disease developed during pregnancy which was aggravated by physiological effects of pregnancy.

Malawi is the second most common cause of infectious diseases related death in the world after tuberculosis. It is estimated to affect between 350 to 500 million people annually and counts for 1 to 3 million deaths per year. Sub-Saharan Africa has the largest burden of malarial disease with over 90% of the world's related deaths occurring in this region. Twenty five million pregnant women are at risk of malaria and accounts for over 10,000 maternal deaths per year (Global Fund, 2009). In 2010 estimates developed by WHO, UNICEF, UNFPA suggest that worldwide about 260 women die per 100,000 live births and most of these deaths occur in Sub-Saharan Africa and concluded that Africa has the highest mortality ratio comparing to Europe and Asia. Malaria remains the leading cause of mortality among pregnant women, in year 2012, about 5 million malaria cases were seen in health facilities and on average, malaria still accounts for 30% of outpatient visits (Ministry of Health, 2014). Mangochi being one, the district were cases of Malaria are very high, this mainly due to the presence of stagnant pools of water. Pregnant

women are most affected with Malaria because pregnancy reduces women's immune system and making them more harm to malaria infection and increasing the risk of illness such as severe anemia which easily led to maternal death (Juliana, 2009). With this background, the present study was aimed to gain insight of impact of Malaria on pregnant women and how it has led to maternal death in Mangochi District.

2. Plasmodium Life cycle

Malaria is caused by *Plasmodium spp.* protozoan parasites (Fig.1). Female *Anopheles* mosquitoes pick up *Plasmodium* parasites in a blood meal taken from an infectious person; blood is required in order to develop eggs. The parasites then go through several developmental stages before they migrate to the mosquito salivary glands. Once in the salivary glands the parasites can be transmitted to a susceptible human host when the mosquito takes another blood meal (Beier, 1998).

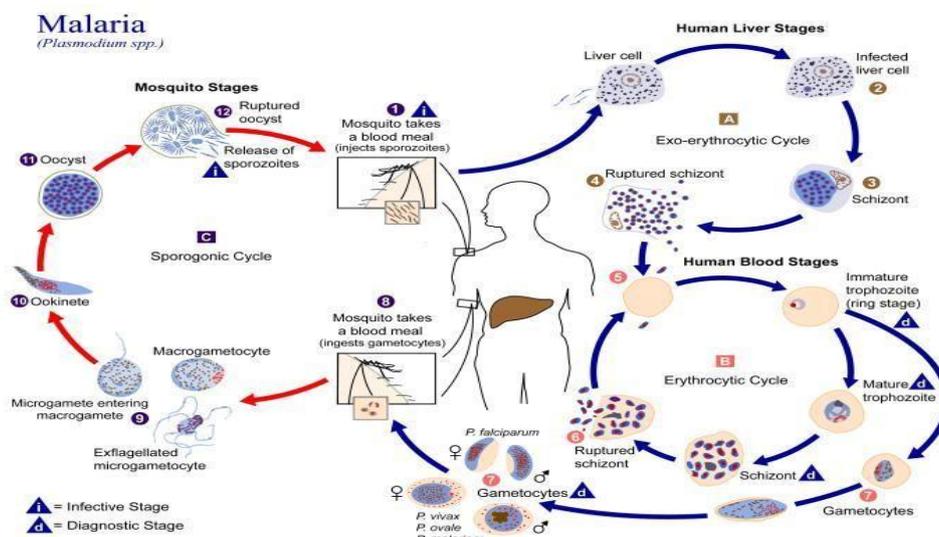


Fig. 1: Plasmodium Life cycle.

3. Malaria Infection during Pregnancy

Malawi just like most developing nations still sink in acute poverty, there are poor programs which fail to address rural women problems, malaria infection during pregnancy is associated with severe anemia and other illness thereby is a leading factor to maternal death. Malaria has serious economic impacts in Africa, slowing economic growth and development and perpetuating the vicious cycle of poverty. Pregnant women are more likely to suffer from severe diseases as result of malarial infection compared with their non-pregnant women (UNICEF, 2013). Malaria is a major cause of anemia in pregnant women and can lead to maternal death at delivery due to hemorrhage. Malaria in pregnancy has a negative impact on fetal growth but it is not known whether this also affects the fetal nervous system, there is no difference between fetal cortical development and brain volumes at any time in pregnancy between women with treated malaria infections and non-infected

pregnancies (Marcus *et al.*, 2012). Thus malarial infection during pregnancy is a significant public health problem with substantial risks for the pregnant woman, her fetus and newborn child. Malaria associated maternal illness and low birth weight is mostly of *Plasmodium falciparum* infection and occurs predominantly in Africa (Violeta *et al.*, 2012).

4. Malaria transmission and its intensity during pregnancy

Malaria is an infection by *Plasmodium*. Five species of *Plasmodium* cause malaria in humans include *P. falciparum*, *P. vivax*, *P. malariae*, *P. ovale* and *P. knowlesi*. Malaria transmission has two biological developmental cycles which include Asexual (in human's erythrocytic cycle and the exo-erythrocytic cycle) and Sexual (in the vector mosquito). Gut and salivary glands are the sites of malarial transmission (Fig.2). *P. falciparum* infection in pregnant women is

usually asymptomatic. The symptoms and complications of malaria during pregnancy differ by the intensity of malaria transmission of the setting and thus the level of immunity the pregnant woman was obtained (WHO, 2017).

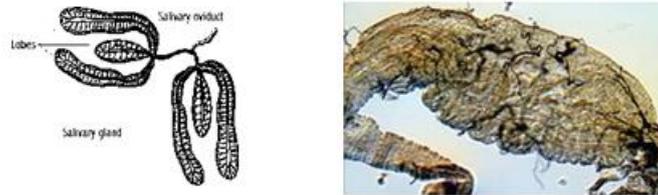
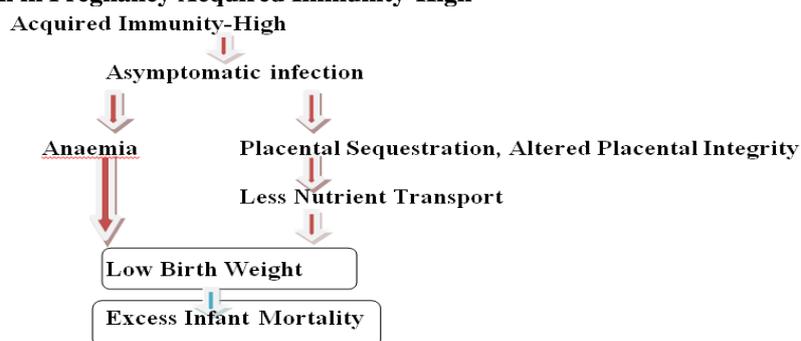


Fig. 2: Salivary gland and Gut (Sites of malarial transmission).

Malaria Transmission in Pregnancy Acquired Immunity-High



5. Research Methodology

5.1 Study Location

The study was conducted at Mangochi District Hospital (Government) and Aslaam Clinic (Non- Government) in Mangochi. 10 health workers were randomly sampled, required data was drawn from primary and secondary sources and in addition data was collected using a questionnaire as a collection tool.

5.2 Research Design

The strategy of the present research uses qualitative method. It provides information about the human side of an issue which include contradictory behaviors and beliefs and helping in identifying intangible factors such as social norms and gender roles. They are typically more flexible in which they allow greater freedom and adaptation of the interaction between the researcher and the study participant. With all questions, participants are free to respond in their own words and these responses tend to be more complex than simply **Yes** or **No**. The relationship between the researcher and the participant is often less formal than in quantitative research. Participants have the opportunity to respond more elaborately and in greater detail, it turn the researchers have the opportunity to respond immediately to what participants say by tailoring subsequent question to the information provided by the participants. It allows

careful investigator to obtain a richer and more intimate view of the social world than with more structured method (Donatella & Michael, 2008).

6. RESULTS INTERPRETATION AND DISCUSSION

Table 1: Source: Primary Data.

Questions	Response	HA	A	N	DA	HDA	
Main Causes	Mosquito Bite	100%	-	-	-	-	
	Low Immune Response	-	80%	10%	10%	-	
	No Sanitation	50%	30%	20%	-	-	
	High CO ₂ release	40%	30%	10%	10%	-	
Antenatal Care	HIV	50%	50%	-	-	-	
	Syphilis	-	50%	50%	-	-	
	Malaria	100%	-	-	-	-	
	History Talking	-	50%	30%	20%	-	
Policies by Government	BPs	20%	40%	10%	10%	10%	
	MOH policy	100%	-	-	-	-	
	Health Awareness to pregnant Women	Health Education	40%	20%	20%	10%	10%
	Routine Checkup	40%	20%	30%	-	10%	
Preventive Measures	Nutritious Food	30%	30%	30%	10%	-	
	Medication	60%	40%	-	-	-	
	Mosquito nets	50%	50%	-	-	-	
	Treatment	IPT	100%	-	-	-	-
Recommendations	SP	100%	-	-	-	-	
	Government involvement	60%	40%	-	-	-	
	Community involvement	50%	30%	20%	-	-	

Note: HA: Highly Agree; A: Agree; N: Neutral; DA: Disagree; HDA: Highly Disagree

Several Questions are asked to the health workers includes Main cause of malaria, Antenatal care, Government policies, Health Awareness, Preventive measures, Treatment and Recommendations.

6.1 Main causes of malaria

100% of the health workers pointed that, main cause of malaria in pregnant women is by means of mosquito bite, 80% agree with low immune response, 50% of respondents agree with poor sanitation in their environment, 40% respondents highly agreed with release of more CO₂ by pregnant women than the normal level so that they can be easily attracted by mosquitoes to bite and results in malaria followed by 30% respondents agreed with the same. According to this survey 70% agreed and highly agreed with CO₂ release (Table 1). In addition, the study reveals that, malaria in pregnancy is caused by *Plasmodium* with 46.7%, 40% mosquito and some respondents said that pregnant women suffer from malaria because they report late for antenatal clinics which are very important for their health as well as the unborn child.

6.2 Antenatal Care

The research project had 100% with no one disagreeing or strongly disagreeing to the assertion on the antenatal effectiveness, there are various reasons as to why health workers provide different type of services includes HIV (50% Highly Agree and 50% Agree), Syphilis (50% Agree and 50% Neutral), Malaria (100% Highly agree), BPs (40% Agree), History talking (50% Agree) to different women because it is very important for every pregnant women to be given drugs at 16 weeks of their gestation.

6.3 Government Policies

The research revealed that the government of Malawi has demonstrated its commitment to reduction of maternal deaths by adopting different policies, these policies has made the government to come with clear strategies in the elimination of maternal death as well as malaria in pregnancy.

Policies dealing with malaria are currently being implemented, examples are, Provision of Insecticide-treated bed nets, the efficacy of ITN's is well documented. Under controlled trial conditions, ITN's have consistently led to a 15-20 percent reduction in maternal deaths. Evaluations of programmes delivering ITNs in Malawi have also shown substantial benefits from their use. Provision of intermittent preventive treatment (IPT), A national policy is in place to provide antimalarial drug (SP) to all pregnant women at the 1st visit after the first trimester and at the beginning of the 3rd trimester (between 28-34) weeks. This was adopted in 1992 and implemented in 1993. IPT with SP in pregnant women ensures that malaria parasites are eradicated (WHO, 2014).

6.4 Health Awareness and Preventive Measures to pregnant women

The health workers suggested that, awareness should be given to the pregnant women by following matters:

1. Health Education (40% Agree)
2. To advise pregnant women to intake nutritious food includes legumes, fruits & vegetables, fats, meat & meat products with proteins and carbohydrate food (30% Highly Agree & 30% Agree)
3. To advise the pregnant women to go to the clinic for routine checkup to intake IPT & SP as 3 dosages

(40% Highly Agree)

4. Emphasize the use of treated mosquito nets (Kiwuwa & Mufubenga, 2008) (100% HA)

6.5 Treatment

Parenteral quinine is the recommended treatment for malaria in the first trimester of pregnancy. The dose is 20 mg salt/kg body weight as loading dose, followed by 10 mg salt/kg 12-hourly until patient is able to take oral medication and at least 24 hours of parenteral therapy has been administered (Falade *et al.*, 2007).

6.5.1 If the patient cannot be weighed, start with infusion of 900 mg of quinine in 1 litre of 5% dextrose.

6.5.2 If quinine cannot be given by infusion, give 10 mg/kg by IM injection. Make sure you give 10% glucose or 5% glucose before administration of quinine; be careful not to induce pulmonary oedema. Random blood glucose should be measured before and after quinine administration.

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Galleries



8. CONCLUSION

Malawi government is very committed in terms of providing advice mobilization and key information documents including recently revised demonstrate a renowned commitment to community mobilization, to improve health care and to promote the combined approach of community based and facility based intervention in order to further accelerate reduction in maternal deaths. Malaria mainly affects women's health and community. The government has taken part in reduction of maternal due malaria by supporting up with policies and programs that focus on malaria prevention and maternal reduction. Despite these efforts taken by government in improving maternal health, the Mangochi district hospital and non-governmental organizations should tackle the problem from the grass root level in terms of improving women's living standards. The hospital management should encourage relationship between health personnel and pregnant women seeking health service.

9. Recommendations

The proposed research finds out that Mangochi District Hospital (Government) and Aslaam Clinic (Private) has low rate of maternal death due to malaria.

9.1 Government Involvement

The distance from the homes of pregnant women to the hospital is very long especially those in rural areas. Most of these pregnant women cover this distance in order to attend early antenatal care while others fail because for them covering long distance is very tiresome and they end up being home as a result they develop pregnancy related complications and potentially serious consequences for both mother and baby. So to avoid those major problems, Government can step forward to build maternity services at all villages, to provide transport facilities frequently in village and also to reduce poverty, to supply nutritious food to the pregnant women and to provide health awareness to the pregnant women in Mangochi district.

9.2 Community Involvement

The research observed that health workers can provide awareness in their catchment areas by encouraging the usage of treated mosquito nets, health education, cleaning the environment and medication to the pregnant women.

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