

Global Health Policy on Maternal Malaria

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Abstract: Malaria is one of the deadliest diseases globally. Malarial infection is one of the top causes related to maternal and infant mortality rates worldwide. Malaria is the second most common cause of infectious disease-related death in the world, after tuberculosis. This paper will explain the importance of maternal malaria and how it fits within the discussion of the global burden of disease. In this research, there will be an explanation on the global response to eliminate malaria, specifically to eliminate maternal malaria, including some of the strategies developed by the World Health Organization (WHO) and donor institutions. Those global responses are following the Sustainable Development Goals (SDGs) number three, about good health and well-being. The subsequent section is the assessment of the adequacy of the global responses to eliminate maternal malaria. The paper then addresses the challenges of implementing global responses, which involve social, cultural, political, and economic commitments necessary to make the elimination strategies successful. This research is using a qualitative methodology with desk research on relevant works of literature.

1 INTRODUCTION

In the Africa region, malaria has caused "as many as 10,000 cases of malaria-related deaths in pregnancy, mainly due to severe maternal anemia (malaria in pregnancy, 2019)." The study also shows that "between 75,000-200,000 infants (children under the age of 12 months) are estimated to die annually as a result of malarial infection during pregnancy (malaria in pregnancy, 2019)." Globally, 125 million women are at risk of malaria every year, and recent research shows that "malaria in pregnancy is different to the disease in the non-pregnant state. The severity of malaria in pregnancy is thought to be due to general impaired immunity plus a diminution of acquired immunity to malaria in endemic areas...pregnant women with malaria are at increased risk of hypoglycemia, cerebral malaria, acute kidney injury, hepatic failure, and hypotension (malaria in pregnancy, 2019)." Infected mothers are prone to have subsequent maladies, which in the end will affect their fetuses. Some of these maladies include "higher rates of miscarriage, intrauterine demise, premature delivery, low-birth neonates, and neonatal death (malaria in pregnancy, 2019)." In cases when pregnant women infected with Human

Immunodeficiency Virus (HIV) and malaria, this condition results in the higher incidences of severe anemia and low-birth-weight newborn babies (rollback malaria, 2015). As shown by WHO's study:

"Pregnant women infected with HIV become twice as susceptible to clinical malaria, regardless of gravidity. In these women, malaria can restrict fetal growth, cause preterm delivery and low birth weight in newborns and reduce the transfer to children of maternal immunities and cellular responses to infectious diseases such as streptococcus pneumonia, tetanus, and measles. Recent evidence suggests that HIV-positive mothers with malaria are more likely to have low-birth-weight infants; in turn, low-birth-weight infants were shown to have significantly higher risks of mother-to-child transmission of HIV compared with infants of normal birth weight (unicef.org, 2019)."

In malaria-endemic areas, adults usually build up immunity against malaria. This immunity will diminish when a woman becomes pregnant. In cases where women become HIV positive before they are pregnant, her chance to be immune to a malaria infection will be lower in comparison to the non-HIV positive women. The severe conditions of

malaria infection for co-infected pregnant women have contributed to the maternal mortality rates, especially in the Sub-Saharan Africa countries. The World Bank formulated the Global Burden of Disease (GBD) project in the early 1990s; it was "the first attempt to quantify the total weight of disease throughout the world (Birn, Pillay & Holtz, 2009: 228)." The GBD project divided diseases into three groups: a) communicable diseases as well as perinatal conditions and nutritional deficiencies; b) noncommunicable diseases; and c) all injuries (Birn, Pillay & Holtz, 2009: 228). These three groups have subdivisions to explain the impact of diseases on global society further. Birn, Pillay, and Holtz explain, "the ongoing GBD studies use the disability-adjusted life year (DALY) as the measure of comparison (2009:228)." The WHO assessments of the global burden disease of malaria in 2014 are as follow: In 2014, there are 97 countries and territories that had ongoing malaria transmission; An estimated 3.3 billion people are at risk of malaria, of whom 1.2 billion are at high risk. In high-risk areas, more than one malaria case occurs per 1000 population. There were an estimated 198 million cases of malaria worldwide (range 124-283 million), and an estimated 584,000 deaths (range 367,000-755,000); 90% of all malaria deaths occur in Africa; and in 2013, an estimated 437,000 African children died before their fifth birthday due to malaria. Globally, the disease caused an estimated 453,000 under five-deaths in 2013 (who.int, 2019).

There are high economic burdens that affect countries and regions because of malaria. Countries with malaria have experienced 1.3% lower economic growth/year, and in Africa alone, no less than 40% of total spending on public health is on combating malaria. The high number of public health spending on malaria meant that other diseases and issues of public health might not have the same attention as malaria. A WHO study in 2013 mentioned that the total public health spending in the Africa region is around US\$ 12 billion/year (who.int, 2019). Malaria also predominantly linked to poverty as shown by data provided by the WHO Africa region and the Roll Back Malaria Partnership. The areas in Africa that are malaria-free are also the wealthiest. In a case of malaria outbreak, the affected region will suffer from decreasing foreign direct investment, and in the end, it will hinder the growth of a business, affects tourism, consumes household incomes and directly related to the increase of absenteeism in school and workplaces. The malaria-infected patients will need to get proper medication and treatment before they can resume their daily activities, and it will affect

the local economic productivity. There is a considerable benefit in successfully control malaria. Because "malaria control made a substantial contribution to the achievement of many of the MDG's, and will be instrumental in realizing the SDGs [Sustainable Development Goals] from 2015 on (rollback malaria, 2015)," for example, in the accomplishment of MDGs goal one on poverty eradication and MDGs goal two on universal primary education (un.org, 2015). Those goals are attainable if students, young people, and productive workers are healthy and free from malaria and other diseases. .

2 THEORETICAL

Malaria is one of the deadliest diseases globally. Malarial infection is one of the top causes related to maternal and infant mortality rates worldwide. Malaria is "the second most common cause of infectious disease-related death in the world, after tuberculosis (Schantz-Dunn & Nour, 2009:186)."

A recent study shows that in 2013, there were an estimated 198 million cases of malaria globally (rollback malaria, 2015). Africa is one of the regions in the world that is greatly affected by malaria; the same study revealed that this region had approximately 82% of the 198 million cases of malaria, and malaria had tremendous impacts on its economic stability (rollback malaria, 2015). The next regions that are plagued by malaria are South-East Asia region (12% of 198 million cases) and the Eastern Mediterranean region (5% of 198 million cases). So, what is malaria, and how does it affect human bodies? Malarial infection is "a parasitic infection caused by the four species of Plasmodium that infect humans: vivax, ovale, malariae, and falciparum. Of these, Plasmodium falciparum is the most deadly (Schantz-Dunn & Nour, 2009:188)."

The same study also analysed that malarial infections begin when the infected female Anopheles mosquito "takes a human blood meal, and the Plasmodium sporozoites are transferred from the saliva of the mosquito into the capillary bed of the host. Within hours, the parasite will migrate to the liver, where it undergoes further cycling and replication before being released back into the host's bloodstream (2009:188)." Malaria's incubation period is between 7 to 30 days, and infected people can develop symptoms such as: "fever, headache, nausea, vomiting, and myalgia [muscle pain] ...patients will often experience symptoms every 2 to 3 days, depending on the type of Plasmodium

with which they are infected (2016:188)” Unless the patients receive treatment, those symptoms will definitely hinder their movements and productivity. Globally, there has been a decrease in deaths from malaria however, in Africa and especially in Sub-Saharan Africa, where malaria is prevalent, this disease has had a significant impact on the overall number of maternal and infant mortality rates. Malaria in pregnancy contributes to significant perinatal morbidity and mortality.

3 METHOD

The method of this paper is a qualitative one. The primary source for this research is official documents from credible online sources, such as the WHO official website, UNICEF, Roll Back Malaria Partnership, as well as textbooks and journal articles on the topic.

4 RESULT AND DISCUSSION

Seven years since the Abuja Declaration and the launch of MDGs, the Bill and Melinda Gates Foundation (The Gates Foundation) sponsored the Gates Malaria Forum in October 2007 (malaria eradication back on the table, 2019). In the aftermath of that forum, WHO together with donor organizations (The Gates Foundation, PATH Malaria Vaccine Initiative, Roll Back Malaria Partnership, The Global Fund, Malaria No More, Nothing but Nets) work to prevent, to cure and to keep close surveillance on malaria using malaria control tools.

In the document provided by The Roll Back Malaria Partnership in 2014, the malaria control tools to eliminate maternal malaria are as follows: (1). Providing and distributing Insecticide-treated nets (ITNs). ITNs is “a form of personal protection that has been shown to reduce malaria illness, severe disease, and death due to malaria in endemic regions (CDC, 2019).” ITNs are distributed for free in the antenatal clinics based on WHO recommendation. The primary goal is to prevent pregnant women and infants, who sleep under the nets, from the infection of malaria caused by mosquito bites; (2) Indoor residual spraying. The spraying aimed to reduce the likelihood of mosquito’s bites on human and has had helped protect 123 million people worldwide in 2013; (3) Chemoprevention. In antenatal care clinics, pregnant women received treatment against malaria in the form of intermittent preventive treatment during pregnancy (IPTp). The medication

is available for free in most of the clinics; (4) Diagnostic testing. Patients were tested using microscopic examination and RDTs (Rapid Diagnostic tests in malaria) to assess whether there is malaria infection in their blood cells. The microscopic and RDTs are available for affordable prices in most countries with malaria-endemic; (5) Treatment. In the cases when the diagnostic test has proved there is a malaria infection, the patients receive Artemisinin-based Combination Therapies (ACTs) to help them eliminate the parasites from their blood cells. The WHO World Malaria Report in 2013 recorded that in Sub-Saharan Africa, the number of children under five years that receive ACTs increased from 5% to 9-26%. There is an increasing number of pregnant women in Sub-Saharan Africa who receive the ACTs as well.

Malaria control tools are only useful if there are sufficient commitments. Political commitments from the government to implement malaria control tools on a national level will ensure that malaria is under control. Some of the socio-cultural aspects (gender roles, reluctance to use ITNs) that influence the spread of malaria can be addressed more effectively at the local and national level if there is a strong political commitment to address this issue. Financial commitments are also very crucial, especially in funding malaria elimination programs such as: providing ITNs, giving ACTs to patients, and conducting global campaigns about malaria infection. There are joint efforts between WHO, nation-states, and donor institutions to pool their resources together to address the problem of malaria.

Based on the official WHO World Malaria Report 2015, there are positive developments in controlling malaria. The report shows:

- Between 2000 and 2015, malaria incidence rates (new malaria cases) fell by 37% globally, and by 42% in Africa. During the same period, malaria mortality rates fell by 60% globally and by 66% in the African region.
- Since 2000, the malaria mortality rate declined by 72% in the Region of the Americas, by 65% in the Western Pacific Region, by 64% in the Eastern Mediterranean Region, and by 49% in the South-East Asia Region. For the first time, the European Region reported zero indigenous cases of malaria in 2015 (WHO fact sheet, 2015).

In the cases of maternal malaria, the report shows that in Africa, there is a significant increase in the number of pregnant women who receive IPTp. In comparison to the number in 2014 when "an estimated 15 million of the 28 million pregnant women at risk of malaria did not receive a single

dose of IPTp (WHO fact sheet, 2015)." At least 90 countries (41 countries in the Africa region) worldwide have distributed ITNs to pregnant women and mothers at antenatal care clinics, and 86 countries provide free diagnostic testing for malaria. A year before, the World Malaria Report in 2014 had declared, "the malaria-specific Millennium Development Goal (MDG 6 target C: to have halted by 2015 and begun to reverse the incidence of malaria) has already been met (WHO fact sheet, 2014)." The World Malaria Report in 2014 and 2015 showed that in terms of reducing the case of malaria infection and malaria-related mortality, the global response and malaria control tools have proved to be effective. Nevertheless, some various reports and articles address the challenges of implementing malaria control tools.

One of the significant challenges is in the distribution and usage of the ITNs in the Africa region. The nets must be thoroughly dipped in the mixture of water and pyrethroid insecticides (the only insecticide approved for use on ITNs) and dried before the distribution, and every 6 to 12 months, the nets must be dipped into the same mixture for them to be effective. However, the retreatment of the nets has been difficult because of the lack of resources and monitoring. The Center for Diseases Control and Prevention (CDC_ Insecticide Treated Bed Nets, 2019) argues, "the need for frequent treatment was a major barrier to the widespread use of ITNs in endemic countries. Besides, the additional cost of the insecticide and the lack of understanding its importance resulted in meagre retreatment rates in most African countries." The retreatment of the nets is not the only challenge in the distribution of ITNs. The nets must be hanging correctly around the beds to provide sufficient protection against mosquito bites. However, in cases where the poor only have a pallet or mattress on the floor without a bed, then the nets could not be used properly. If the nets are torn in some parts and not properly sewn back or replaced, then the mosquitoes can still feast on the humans who sleep underneath. The social-cultural perception considers the nets to be cumbersome. Education and continuous campaigns to increase awareness on the usage of the nets are becoming critical factors in overcoming this challenge.

The second challenge is in the form of resistance toward insecticide. There is a study that shows mosquito resistance to at least one insecticide, which identified in at least 49 malaria-endemic countries (rollback malaria, 2015). It also follows the fact that ACTs treatment might be proven to be not very effective because there were some cases where

patients showed resistance to artemisinin drugs in Southeast Asia countries. The Roll Back Malaria Partnership reported that despite the global financial commitment to combat malaria, there is still a gap of US\$ 2.4 billion per year to fund the implementation of the malaria control tools worldwide. In most countries in Africa and Southeast Asia, the socio-cultural restrictions also make it more difficult for pregnant women and adolescent girls to get equal treatment of malaria in comparison to men.

5. CONCLUSION

Malaria is a preventable and treatable disease, and there are efforts to find the best cure for this disease across history. Malarial infection begins when the female Anopheles mosquito feasts on human blood cells. The infection thus disrupts the normal cycle of blood cells and causes severe anemia that proves to be fatal, especially to pregnant women, because it endangers the mother and fetuses. This condition is known as maternal malaria. Maternal malaria can cause maladies such as severe anemia, hypoglycemia, cerebral malaria, acute kidney injury, hepatic failure, and hypotension. These maladies will eventually have resulted in frequent miscarriages and low-birth-weight newborn babies. The effects of malaria infection will be more severe on co-infected pregnant women. Maternal malaria is directly related to maternal and infant mortality rates worldwide.

There are global response and commitment undertaken by WHO, nation-states, and donor institutions to eliminate malaria by implementing malaria control tools. Those global efforts also in accordance with SDG's global achievement on health and well-being.

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