

PERCEPTIONS OF MALARIA AMONG WESTERN POPULATIONS AND THE WANDAMBA OF EASTERN AFRICA: A CROSS-CULTURAL COMPARISON

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INTRODUCTION

People in every culture try to explain disease in ways that make sense to them and that are consistent with their life experiences. As a result, many different perceptions of disease can be found around the world. This paper is aimed at answering the following question: what are the perceptions of malaria among the Wandamba people of Eastern Africa, and how does this perspective contrast with the Western view? The specific objectives include determining the perceptions relating to the cause, transmission, symptomatology, treatment, and prevention of malaria from both the Western and Wandamba view. First a brief history of malaria will be presented, along with its significance in the world today. Next the methods used to collect information will be explained. Then the results will be discussed, comparing the views on malaria held by Western populations with those of the Wandamba. Finally, some of the implications of the differences between these two perspectives will be considered.

HISTORY AND SIGNIFICANCE OF MALARIA

Malaria is a serious, mosquito-borne disease with flu-like symptoms that is thought to have affected ancestral human populations in the mid-Pleistocene (Kiple et al. 1993, 860). Records show that malaria was present throughout several well-known periods of time, including in ancient Greece (Muela 2000, 5) and the U.S. Civil War (Farmer 1999, 41). Although malaria was brought under control in this country in part through DDT eradication programs in the 1940's and 1950's, the disease remains a problem for the U.S. and the rest of the world today. More than 100 countries have endemic malaria, which means that the disease is constantly present in these areas. According to the Centers for Disease Control and Prevention (CDC), there are 300-500 million malaria infections in the world each year (CDC 2003). One million people die from malaria annually (CDC 2003).

Even though the United States has not experienced endemic malaria for about 50 years, there are still cases of malaria reported in the U.S. each year. In

2001, there were 1383 cases across the U.S., and only one state, South Dakota, had no malaria infections to report (Filler et al. 2003, 3-4). The two places with the highest number of infections that year were California (173 cases) and New York City (239 cases) (Filler et al. 2003, 3-4). One of the factors involved in the current presence of malaria in the United States is international travel (Gordon et al. 2000). People entering the country from a malarious area, such as immigrants, tourists, and military personnel, can be infected with the disease and spread it to others (Gordon et al. 2000). There is even a potential for malaria to become reestablished in the U.S., since mosquito vectors capable of carrying the disease can be found in 48 of the 50 states (Zucker 1996, 37). This reality has raised concerns with many U.S. Government officials (Gordon et al. 2000). A recently unclassified document from the U.S. Bureau of Intelligence, titled, *The Global Infectious Disease Threat and Its Implications for the United States*, identifies malaria as one of the top seven killers in the world and a significant threat to American citizens and military personnel, as well as a threat to America's foreign investments and even national security (Gordon et al. 2000). It can be seen that malaria is not just a problem of the Third World—it is a global health issue with significant consequences for our country and others.

METHODS

In order to compare the views of malaria found in another culture with the views held here in the West, a study population was selected--the Wandamba people, who live in Eastern Africa, in the country of Tanzania. They reside in the Kilombero Valley area in the southern part of the country, surrounded by groups such as the Waporogo, Wasagara, Wakaguru, and Walguru (Planning Commission et al. 1997, 2). Within the Kilombero Valley, the Wandamba are the majority ethnic group in the Kilombero District of the Morogoro Region (Planning Commission et al. 1997, 3). This valley experiences holoendemic malaria, where the transmission is very intense all year round (Muela 2000, 20-21). The area consists of a low altitude flood plain with annual rainfall between 1200 and 1800mm, which encourages mosquito breeding. (Minja et al. 2001, 615; Abdulla 2000, 41) As a result, malaria is very common--it is estimated that a person can have 200-300 infective mosquito bites per year (Abdulla 2000, 43).

The data for this project was collected by consulting journal articles, books, dissertations, and government reports obtained through the Eastern Washington University JFK Library and the Internet. Several key words were used in searching for information, for example: malaria, Wandamba, Tanzania, Kilombero, mosquitoes, perceptions, and views. Information sources were

studied in order to identify any qualitative or quantitative data relating to the research question and objectives. General information relating to malaria was also sought, in order to provide supporting background for the project. The resulting data was then organized into one of three categories, depending on if the information provided background, related to the Western perception, or related to the Wandamba perception.

RESULTS: WESTERN VIEW

According to the Western view, malaria is caused by a single-celled parasite of the genus *Plasmodium* (WHO 2003). Four species of the parasite are involved: *P. malariae*, *P. ovale*, *P. vivax*, and *P. falciparum* (CDC 2003). *Plasmodium falciparum* causes the most serious form of malaria (Nchinda 1998, 398), and is also the most common species found throughout Tanzania (Abdulla 2000, 3). This species is seen in more than 90% of the country's malaria infections, while *P. ovale* and *P. malariae* are found less often, and *P. vivax* is rare (Abdulla 2000, 3).

The main mode of malaria transmission is through a mosquito vector, specifically by the bite of an infected *Anopheles* mosquito (Zucker 1996, 37). (In Tanzania, the vector is *Anopheles gambiae*.) (Nchinda 1998, 398) After entering the human host, the parasite replicates in the liver and then infects red blood cells. (WHO 2003) Other ways the disease can be transmitted are through contaminated needles, blood transfusions, and from mother to fetus, but these routes are less common (Kiple et al. 1993, 856).

Malaria affects all ages, but impacts young children the most since they have not had time to develop any immunity (Olliaro et al. 1996, 231). A partial immunity gradually develops after successive exposures to the disease, which makes later infections less severe (Olliaro et al. 1996, 231). The incubation period depends on the species involved, but is generally 8-30 days (WHO 2003), and the actual infection can last for several weeks. *P. vivax* and *P. ovale* can even enter a dormant stage in the liver, causing relapse months or years later (Kiple et al. 1993, 856). Atypical cases are common, and may be due to infection by multiple species of *Plasmodium*, previous incomplete anti-malarial treatments, or other factors (Muela 2000, 9).

The severity of malaria varies, ranging from a relatively mild infection to life threatening. The classic symptoms of mild malaria include repeated episodes of fever, sweating, and chills (WHO 2003). Other symptoms can include headache, body aches, and vomiting. A severe infection can involve conditions such as anemia, respiratory problems, enlargement of the

spleen, and acute renal failure (Muela 2000, 11). *Plasmodium falciparum* is especially known for causing a potentially fatal form of malaria called cerebral malaria, in which infected red blood cells block the blood vessels leading to the brain, resulting in severe headache, delirium, convulsions, and coma (Muela 2000, 10-11).

Malaria is treated by antimalarial drugs, which are dispensed in syrup form for infants, tablet form for children and adults, or given through IV in severe cases. Some examples of the drugs used include chloroquine, mefloquine, sulfadoxine-pyrimethamine, doxycycline, and proguanil. (WHO 2003) Widespread drug resistance has made treatment with these drugs more difficult (Nchinda 1998, 399-400). For example, chloroquine was previously the standard first line treatment, but resistance has been reaching high levels in many areas around the world. This drug was recently dropped in favor of a promising new treatment, artemisinin, which is based on the Chinese sweet wormwood plant (McNeil Jr. 2004).

At this time, there is no effective vaccine for malaria although some are in progress (Muela 2000, 18), so prevention consists mainly of vector control. This includes reducing the number of mosquitoes by removing breeding areas or by using larvicides and insecticides (Benenson 1990, 264-265). Another form of prevention is sleeping under insecticide-treated nets (called ITNs) since *Anopheles* mosquitoes bite late at night (CDC 2003). These ITNs have been found to be fairly effective, reducing malaria cases by almost 50% (Abdulla 2000, 39).

RESULTS: WANDAMBA VIEW

The Wandamba interpretation of malaria does not completely correspond with the Western view. Also, exposure to Western ideas has created a lot of variability in beliefs, as many people have combined different aspects of the two perspectives in multiple ways (Muela 2000). The results presented here only represent a small sample of the complexity found in the Wandamba view. In general, symptoms that Western populations lump together under the label "malaria", are instead separated into four different illnesses in the Wandamba interpretation: "Malaria", "Homa Kali", "Bandama", and "DegeDege" (Abdulla 2000).

The Wandamba definition of Malaria is characterized by fever, chills, shivering, body aches, headache, and vomiting that tend to occur during the wet season (Minja et al. 2001; Muela 2000, 10). It is considered to be a mild illness, and just a part of everyday life that cannot be prevented, and which

does not need to be treated right away. (Minja et al. 2001, 616; Muela 2000) Frequently mentioned causes include exposure to intensive sun or hard work, fever, and drinking or wading through dirty water (Muela 2000).

Homa Kali is an illness marked by the main symptoms of high fever and body weakness that tends to occur during the dry season (Minja et al. 2001, 617; Muela 2000, 105). Exposure to the sun and hard work are seen as some of the causes, since these create excess heat in the body, and result in "homa" (fever) (Muela 2000, 67). Antimalarial and antipyretic drugs are used for treatment. Prevention consists of taking antimalarial drugs (Minja et al. 2001, 617).

With Bandama, the symptoms include a swollen spleen, anemia, and fever. It is caused by dirty or contaminated blood that has accumulated in the spleen, and so treatment consists of draining away this dirty blood (Minja et al. 2001, 617). Two common ways blood may become contaminated include by exposure to dirty soil or from eating fresh mango leaves (Muela 2000, 162). A certain medicine is sold locally as a preventative for Bandama, called "vidonge vya bandama" (tablets for swollen spleen) (Minja et al. 2001, 617). This medicine has been found to contain the antimalarial drug sulphadoxine-pyremethamine (Minja et al. 2001, 618).

The symptoms of DegeDege include fever, rolling of the eyes, stiffness, and convulsions (Muela 2000, 97). There are two main causes: attacks by bad spirits and from inhaling the white powder on the wings of a certain type of butterfly that is commonly seen around homes at dusk (Minja et al. 2001, 617; Muela 2000, 87). Treatment for DegeDege involves putting the mother's urine on the child, or using herbal remedies (Muela 2000, 89). These treatments are thought to cool the child down, resulting in a lower level of illness (Muela 2000, 90). This is considered important before taking the child to the hospital, because otherwise the strong medicine given at the hospital will react with the illness (Muela 2000, 90). Prevention of DegeDege consists of protection from the supernatural, by using herbal concoctions called "ngambi" or amulets called "hirizi" made by traditional healers (Minja et al. 2001, 618).

CONCLUSIONS

In summary, the Wandamba view involves four separate diseases, while the Western view consists of one disease that comes in a range of forms from mild to severe. Wandamba Malaria is comparable to the Western mild malaria, and Homo Kali is comparable to what the West considers to be a more moderate malaria infection. Bandama and DegeDege are both related to what the West-

ern view defines as severe malaria, with Bandama being similar to the enlargement of the spleen seen in severe malaria, and DegeDege having similarities to cerebral malaria. The Wandamba people do not traditionally make a connection between these diseases, malaria, and mosquitoes, although Western health education campaigns have tried to change this view. The people reason that if mosquitoes were really causing severe diseases like DegeDege and Bandama, then everyone in the village should be dead since they are being bit by mosquitoes all the time (Minja et al. 2001, 616).

These differences in views are also an example of the variation in theories of disease causation. The Western interpretation of disease relies mostly on germ theory, the idea that diseases are caused by microorganisms. Accordingly, malaria is understood to be caused by a protozoan. The Wandamba view focuses more on the lifestyle of a person, such as how being exposed to hot sun or hard work can cause illness.

One reason why understanding how local populations perceive of malaria is important is in creating successful assistance programs. For example, the success of an Insecticide-Treated Net program for the prevention of malaria depends on if the community perceives mosquitoes to be a cause of malaria (Minja et al. 2001, 615). Research into the perceptions of disease will likely become just as important as medical research in dealing with malaria, as we need to understand other people in order to treat them. In doing so, we can help prevent the disease from spreading even more to other countries, including our own.

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