

Saraswati Braun  
Dublin Coffman High School  
Dublin, OH  
Ghana, Malaria  
**Ghana's Pesky Problem**

On the coast of West Africa lies a country with incredible potential. Ghana, also known as the Gold Coast, is the world's largest exporters of cocoa after Côte d'Ivoire. The country, known for being one of Africa's most peaceful countries, is also known for its rich history and incredible culture and traditions. Ghana is home to beautiful, sandy beaches and lush forests filled with a variety of wildlife and the country has an abundance of tourist spots. Close to the equator, Ghana typically has a tropical climate with both rainy and dry seasons. While the environment is absolutely breath-taking, the people there are even more amazing. The culture that they bring to the rest of the world, the music, the dancing, the food, it amazes and stuns everyone it comes in contact with. Unfortunately, Ghana has always had a problem looming over them. Both in the past and the present, obstacles and headaches have always kept them from reaching their full potential and earning their rightful place with the rest of the developed countries.

Dating all the way back to the 15th century, Ghana has always been an essential and influential asset to, not only other African countries but to countries on other continents as well. Between 400 and 1100 C.E., the country was the central link for two major trans-Saharan routes. However, Ghana's history took an unfortunate turn around the late 1400s when European countries began to colonize Ghana. Europe's primary goal was to obtain gold from the country in exchange for commodities like cloth, metals, arms, etc. This gave rise to the name "The Gold Coast" and by the mid 18th century, Dutch, Danish, and British merchants crowded the coastal scene. Since Ghana's location was so accessible and was a sea-borne trade route, it soon became a crucial trade center for European countries. Moving ahead to the mid-1800s, the British began to assume an "informal protectorate" Fante Ghanaian states, eventually leading them to completely colonize Ghana in 1874 until 1957 when Ghana finally won back their independence.

Unfortunately, due to colonization, Ghana's economy was already crippled and even now, it is still feeling the effects of being under British rule. When the British colonized Ghana, they imposed their own cultures and traditions on Ghanaians, forcing them to conform to their way of life. This included changes in the education system to mimic Western schools and ways of learning. In addition to this, Ghana's economy was significantly affected after the African slave trade. The goal of colonialism is to "exploit the physical, human, and economic resources of an area to benefit the colonizing nation" which is exactly what Britain did. The country was quickly expanding and needed raw materials from Ghana to combat it. They were able to exploit the abundance of natural resources that Ghana had. They increased the amount of food that was being traded in Ghana, foods that were vital to the diets of Ghanaians, which led to malnutrition and famine. The writer of "The Impact of Colonialism on African Economic Development" Joshua Dwayne Settles wrote that, "Had native industry been encouraged and cultivated by the colonizing powers, Africa would probably be in a much better economic and technological position today." This is because the infrastructure that was adapted was made to exploit the natural resources, not to help Ghana grow and expand in technological and economic advances. All of this history has led Ghana to where it is now and caused many problems to arise. While it is one of the most advanced countries in Africa, it still has a long way to go in comparison to countries like the United States or countries in Europe. Through colonialism, researchers have determined that malaria began traveling through Africa about 3,000 years ago and was quickly spread through wars and human labor; they believe that malaria "coevolved with humans" (McVean) and rapidly spread to many countries on the continent. Due to economic instability, the infrastructure of Ghana is not on par with most developed countries and

malaria is most prevalent in underdeveloped countries or in other words, countries that have been colonized.

According to the World Health Organization, malaria is a “life-threatening disease caused by parasites that are transmitted to people through the bites of infected female *Anopheles* mosquitoes.” The symptoms typically include fever, headache, chills, and if not treated, can ultimately prove to be fatal. Most people that contract malaria are bitten between dusk and dawn, as the *Anopheles* mosquitoes are strictly nocturnal. The *Anopheles* mosquito prefers aquatic habitats such as puddles or hoof prints, of which there are plenty in tropical places during the rainy season. These mosquitoes also prefer to lay their eggs in water and research shows that polluted water is becoming a hot spot for mosquito breeding grounds. As the eggs hatch into larvae, the female mosquitoes “seek a blood meal to nurture their eggs,” which is where the “malaria bites” come from. Ghana is classified as being in the malaria control phase, according to the global malaria elimination program. Malaria is endemic in the country, which means that all 27 million inhabitants are susceptible to malaria infection. In 2015, of total reported deaths, 19% were caused by malaria. In poorer households, it was seen that there was a higher rate of malaria, as well as in areas where there was a lack of education opportunities. There is a 2015–2020 Ghana Malaria Strategic Plan that aims to reduce the malaria burden by 75%. However, readily available mathematical models to support decisions for planning and subsequent evaluation of these strategies remains difficult because there is limited research on this topic.

Luckily, there are precautions and preventions that can be taken to combat malaria. A method that has been taken was to distribute bed nets to the people since most bites occur at night. The bed nets would completely cover the area that Ghanaians are sleeping in and prevent mosquitoes from entering. However, after I contacted Dustin Homan, (a project manager who studied Ghana and spent time in it) I learned that the bed nets they had distributed to keep mosquitoes from biting at night were instead being used as fishing nets, which was causing overfishing and a reduction of fish stocks. The nets also contained an insecticide, which was causing fish to die when they were put in water. To fix this problem, the public would have to be educated about the issues that come with using bed nets as fishing nets. Interestingly, Ghanaians' perception of malaria is much different than ours. Most of the people Homan spoke to about it tended not to sleep under nets at night nor did they take any kind of prophylaxis. Some had had malaria and viewed it like we view getting a cold: common and certainly not life-threatening. I can attest to that statement myself. When I visited my family in Ghana, my mom seemed to be the only one really worried about mosquito bites. She made sure we took malaria medicine daily and slathered my brother and I in mosquito repellent. However, none of my cousins were worried about it and they went about their day-to-day activities repellent free. When I spoke to my step-dad who lives in Tamale, Ghana about malaria, I asked him how people around him perceive malaria; if their ideas matched what Mr. Homan told me. He said that Ghanaians, and most Africans actually, are not afraid of malaria because “there’s a cure for it.” However, he also said that they “don’t have accurate statistics on how many people it kills and the rate at which it kills.” So, really, it is an education problem. They do not know how dangerous malaria is because they think that the cure will save them every time. There are indeed hospitals, health centers, and clinics provided by Christian missions and the government, however, the population continues to grow and this puts great stress on the facilities.

Since they already view malaria as barely a problem, the methods that they will take to prevent it will have to be relatively easy, or else they will see it as too much trouble to go through. It will also have to be cost-effective since over two million people live below the poverty line. For that reason, natural repellants might be the best bet for Ghanaians. One method would be the use of Neem, which grows naturally in Ghana and common backyard trees, used for shade. Neem oil can be used as an insecticide and has proven to be effective against mosquitoes. To extract the oil, they would need to collect the ripe seeds, dry, roast, crush, and press them. They could then use the oil as a mosquito repellent for their bodies. Now, there is an unpleasant odor that comes with using neem oil which might cause a problem

for people using them. In the grand scheme of things the smell is a very small problem, but all aspects of the solution must be taken into consideration. After all, if they already do not view malaria as important, they will not want to put something that will make them smell awful on their bodies. Another method would be to use West African Basil, also known as Clove Basil, as a natural repellent. This would be much simpler because the plant itself repels mosquitoes. All people would have to do is plant the basil outside of their homes and since it grows naturally in Ghana, it will not be hard to obtain. Not only does it work in this way, but oil can also be obtained from clove basil and made into a repellent in the same way that Neem can.

These methods rely on getting this information to the people, though. It would have to be done by people willing to actually go into villages and cities and educating the citizens there on the dangers of malaria and in turn showing them how to take precautions. There are many volunteer organizations that go into Ghana and help people such as Voluntary Service Overseas (VSO) or Humanitarian Aid Foundation. These teams could really impact many areas in incredibly important ways. In addition to outside help, Ghana also needs the assistance of her government and her citizens to eradicate malaria. As of now, there are sixteen regions in Ghana which are further split into districts. There are “elected District Assemblies, to which government-appointed members and an appointed District Chief Executive are added” (Brittanica). To implement these solutions, it is important that local governments take responsibility for their designated districts. It would be hard for the federal government to carry out and enforce these ideas to small villages. We in the United States rely on our State and local governments to enforce area-specific laws; Ghana’s governments would have to do the same. As each district is different, socially and economically, each district assembly would be able to decide what is right for their group of citizens. Proper malaria education is also a must for everyone that could be affected. A malaria study showed that “junior secondary students have the capability to use the creative arts to achieve increased knowledge of malaria” (Ntim, Johnson 4). However, this study did not show that education would cause behavioral changes and perspectives on malaria. For behavior to change, education would need to be given early, to children in health classes, and as they grow older, they will already know the dangers of malaria and proper precautions to avoid it. Once one generation is informed, they carry that information to the next, and that generation to the next, and so on. Of course this would take some time but, in the long run, would make a big impact. Right now, information on malaria should be given regularly. Statistics on the number of people that get malaria, deaths from the disease, and how dangerous it can be should be distributed to people through where they get their main sources of information: TV, the internet, and radio.

As for other future solutions, there are scientists currently researching genome editing (also called gene editing) which is a group of technologies that give scientists the ability to change an organism's DNA. Through this, scientists might be able to alter the malaria-carrying gene that the Anopheles mosquito has so that malaria would not be transmitted through them at all. This would target the problem at the source and, in the long run, bring down costs caused by malaria. Once the mosquitoes are no longer able to transmit malaria, people will not have to worry about it as it is not contagious. There is still much that is unknown about gene editing, such as future impacts and how effective it is. As well as a lack of information and experience, costs must always be taken into account when researching new solutions. Many countries are not yet able to research gene editing and the possibilities it holds. However, Ghana’s economy is evergrowing and, in the long-run, gene editing could be more cost effective than other solutions. As this is new and developing science, tests have to be carried out to see how it will affect the environment. Altering the genes of mosquitoes to delete the malaria-carrying gene could have drastic effects on the surrounding environment as well as the food chain. As of right now, an organization called Target Malaria is working to take down malaria using genetic modification. They have operations in four different countries in Africa, including Ghana and they specifically target only the Anopheles mosquitoes, as to not impact any other mosquitoes or insects. They aim to introduce genes

that will make enzymes that recognize and cut the specific pieces of DNA that carry malaria and this will then disrupt the gene sequence. This method is also self-sustaining because the new gene sequences will be passed onto the next generations of mosquitoes. However, this science will not be available for some time and so other precautions must be taken now.

There is no shame in getting help and the U.S. should be ready to aid the people of Ghana. There is a common misconception that the U.S. gives too much aid to countries, however this is not true. Less than 1% of the federal budget goes to foreign assistance, so it is not that we do not have the resources to help. While the argument may be made that the U.S. should solve its own problems before helping other countries, this could potentially harm us. If we give aid to countries, countries in turn will give aid to us when we need it. The United States relies on Ghana exports for cocoa beans, cocoa paste, and cocoa butter, rubber and allied products, tree nuts, and fresh vegetables. Helping Ghana is investing in our own future. Following through with foreign aid to Ghana and Ghana repaying us back in the future also gives us more credibility with other countries. As they see that Ghana trusts the U.S. with foreign aid and vice versa, other countries will also be comfortable with making deals with the U.S. Foreign aid humanizes governments and shows countries that we also care about helping other countries, not just our own.

This country has so much potential and so does her people. I have personally seen it and I am eager for the rest of the world to see it also. Ghana is a large exporter to many western countries, including the United States. They export cocoa, gold, and have nearly doubled their oil exports in recent years. The stereotype that African countries are poor and underdeveloped certainly does not show in Ghana. In fact, it is currently one of “the fastest growing economies” (UNDP) in Sub-Saharan Africa and has been the first country of the continent to cut extreme poverty in half. To continue being a large exporter of goods, Ghana must also continue to develop, in all aspects. Their democratic government is gradually becoming more and more stable and they have gained the freedom and ability to report accurate news without fear. Ghana has many advantages due to their location and can continue to grow their economy through commodities and agriculture. They are expected to be the most advanced country in Africa, but they must take care of their people. It is true that problems plague the country, just like many other countries around the world, but they can be fixed with foreign aid, effort and hard work. Ghana has overcome barriers before and they will continue to do so. There are so many volunteers willing to use their time to better the lives of others; they are just waiting for the proper solutions and tools to utilize. Malaria is just another barrier to a brighter future. Ghana can overcome malaria and continue to make great strides towards becoming a fully developed nation.

#### Works Cited

“About Ghana.” UNDP in Ghana, [www.gh.undp.org/content/ghana/en/home/countryinfo.html](http://www.gh.undp.org/content/ghana/en/home/countryinfo.html)

Awine, Timothy, et al. “Towards Malaria Control and Elimination in Ghana: Challenges and Decision Making Tools to Guide Planning.” *Global Health Action*, Taylor & Francis, 2017, [www.ncbi.nlm.nih.gov/pmc/articles/PMC5678345/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC5678345/).

Banda, Rajaa. “10 Organisations to Volunteer For in Ghana.” *Culture Trip*, The Culture Trip, 15 Nov.

- 2017, [theculturetrip.com/africa/ghana/articles/10-organisations-to-volunteer-for-in-ghana/](http://theculturetrip.com/africa/ghana/articles/10-organisations-to-volunteer-for-in-ghana/).
- Boateng, Ernest Amano, et al. "Ghana." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 22 Jan. 2020, [www.britannica.com/place/Ghana](http://www.britannica.com/place/Ghana).
- "Did You Know That Colonialism Is Responsible for the Spread of Malaria?" *Office for Science and Society*, 26 Feb. 2019, [www.mcgill.ca/oss/article/did-you-know-history/did-you-know-colonialism-responsible-spread-malaria](http://www.mcgill.ca/oss/article/did-you-know-history/did-you-know-colonialism-responsible-spread-malaria).
- Dunkel, G. *How Colonialism & Imperialism Spread Malaria*, [www.workers.org/2008/world/malaria\\_0131/](http://www.workers.org/2008/world/malaria_0131/).
- "Fact Sheet about Malaria." *World Health Organization*, World Health Organization, [www.who.int/news-room/fact-sheets/detail/malaria](http://www.who.int/news-room/fact-sheets/detail/malaria).
- "Ghana." *Ghana | Severe Malaria Observatory*, [www.severemalaria.org/countries/ghana](http://www.severemalaria.org/countries/ghana).
- "Ghana." United States Trade Representative, [ustr.gov/countries-regions/africa/west-africa/ghana](http://ustr.gov/countries-regions/africa/west-africa/ghana)
- "How Does Weather Affect Mosquito Activity?" *Preventive Pest Control*, 5 July 2016, [www.preventivepestcontrol.com/weather-affect-mosquito-activity/](http://www.preventivepestcontrol.com/weather-affect-mosquito-activity/).
- Ingram, George. "What Every American Should Know about US Foreign Aid." Brookings, Brookings, 31 Jan. 2020, [www.brookings.edu/policy2020/votervital/what-every-american-should-know-about-us-foreign-aid/](http://www.brookings.edu/policy2020/votervital/what-every-american-should-know-about-us-foreign-aid/).
- Scudellari, Megan. "Self-Destructing Mosquitoes and Sterilized Rodents: the Promise of Gene Drives." *Nature News*, Nature Publishing Group, 9 July 2019, [www.nature.com/articles/d41586-019-02087-5](http://www.nature.com/articles/d41586-019-02087-5).
- Settles, Joshua Dwayne, "The Impact of Colonialism on African Economic Development" (1996). University of Tennessee Honors Thesis Projects. [https://trace.tennessee.edu/utk\\_chanhonoproj/182](https://trace.tennessee.edu/utk_chanhonoproj/182)
- Smith, Noah. "Ghana Is Africa's Top Candidate for Economic Development." *Bloomberg.com*, Bloomberg, 10 Feb. 2020, [www.bloomberg.com/opinion/articles/2020-02-10/ghana-is-africa-s-top-candidate-for-economic-development](http://www.bloomberg.com/opinion/articles/2020-02-10/ghana-is-africa-s-top-candidate-for-economic-development).
- "U.S. Relations With Ghana - United States Department of State." U.S. Department of State, U.S. Department of State, 13 Feb. 2020, [www.state.gov/u-s-relations-with-ghana/](http://www.state.gov/u-s-relations-with-ghana/).
- "Where We Operate." *Target Malaria*, [targetmalaria.org/where-we-operate/](http://targetmalaria.org/where-we-operate/).
- Ntim, Stephanie & Johnson, Katherine. (2019). The art of malaria education: an arts-based malaria education model, Pepease-Kwahu, Ghana. *International Journal Of Community Medicine And Public Health*. 6. 5042. 10.18203/2394-6040.ijcmph20195443.

