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# Bilharzia in Sub-Saharan Africa: A Biosocial Disease

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## **Bilharzia in Sub-Saharan Africa: A Biosocial Disease**

### **Abstract**

This essay examines bilharzia in Sub-Saharan Africa as a bio-social disease. It studies two distinct cases in Uganda and Nigeria to demonstrate how cases differ in different regions but are still connected by their socioeconomic causes. The paper challenges readers to relinquish the stereotype that Africa is a disease-ridden continent and that the West consists of white saviors. After reading this essay, the audience will be better equipped in examining socioeconomic factors and the role they play in disease. They, too, will recognize that socioeconomic conditions call for different methods of treatment. Simple doses of medication are not enough, but community-based education groups, will significantly help treat this distinctly localized disease.

### **Introduction**

Take a moment to remember the last time you washed your clothes, your car, or simply waded in a refreshing pool of water to cool off on a hot day. Did the risk of catching a debilitating disease ever cross your mind? Most likely not. Unfortunately, those living near bodies of freshwater Sub-Saharan Africa risk contracting bilharzia on a daily basis through their occupational and domestic activities. Globally, Africans carry 93% of the disease, and in some communities, as many as 50% of the population suffers ("Schistosomiasis and HIV"; Adenowo et al. 2015:198).

But what is bilharzia? Is it "just another African disease," or does it require attention, the relinquishing of stereotypes, to foster a better understanding of health on a social level? People contract bilharzia via snails that harbor parasitic worms in fresh bodies of water. Whether swimming, bathing, working, or performing chores in water,

Sub-Saharan Africans know that bilharzia exists, but they cannot simply abandon their livelihood in the hopes of not being infected. In learning about the disease's social constraints, novices might wonder, "How do health professionals currently treat bilharzia?" and "What improvements can they make in the future?" "How can people see bilharzia as a social, behavior-induced condition, and not just a medical one?" Research shows that if health professionals and mass treatment campaigns, such as those of the World Health Organization, can establish a new humanitarian framework that embraces the social, localized aspects of bilharzia in Sub-Saharan Africa through community-based education programs, the field will be better equipped to respond to health crises and thus view bilharzia not as "just another African disease" but instead as a widespread, yet distinctly localized, disease caused by constrained socioeconomic behaviors; bilharzia-ridden communities, too, by learning to embrace their biosocial identity, can advocate for effective health policies and adequate sanitation.

This work steers clear of persuading Western saviors to rescue the oh-so-deprived and so-called afflicted "diseased heart of Africa." Unlike a one-note tale, this work does not persuade readers to donate a dollar a day to "save the Africans." As Jane Livingston, author of "Pregnant Children and Half-Dead Adults: Modern Living and the Quickening Life Cycle in Botswana" says, "There will be no hyenas or elephants, or even any big, red African sunsets"; shift attention away from preconceived notions about Africa, and instead, see disease, and bilharzia in this case, as a problem neither strictly Western nor African but as human, unfolding due to socioeconomic and regional conditions (*Improvising Medicine* 2012:x). Step outside of familiar contexts, and call into question "basic assumptions about illness...and medicine that American patients, their clinicians,

and family members often take for granted” to truly contemplate what it means to be seriously ill in a context of socioeconomically constrained, disease-causing behaviors (*Improvising Medicine* 2012:21-22).

With that in mind, let socioeconomics be bilharzia’s backdrop. If Africans contract bilharzia via fresh water, the health field must examine the ways in which different areas depend on water. Bilharzia sprouts from behavior, and behaviors vary throughout Africa, just as economies do. Bilharzia’s mode of exposure in, say, Uganda differs with that of Nigeria. If health professionals understand bilharzia’s contributing factors, they can treat the disease effectively. Livingston reminds us to not neglect health’s ethnographic features:

...Though we know much about how the medical and public health professions and their institutions and technologies have responded to epidemiologic transitions, we know less about how local people have experienced and interpreted such changes as they occur in terms of broader historical trends...Epidemiologic and demographic transitions have not been uniform across historical or geographic contexts, and....local actors respond to disease [and] health...in culturally and ecologically specific ways. (“Pregnant Children” 2003:134)

As Livingston shows, doctors have learned about how to medically respond to endemic diseases, but they have neglected the social aspects—studying the people affected, their conditions, and the way they respond to the disease. Rather than localized treatment, doctors often seek out one-size-fits-all methods. But one cannot separate the person from the disease because people, across cultures, respond differently to the same diseases. Health and social circumstances go hand in hand, and poor social circumstances induce bilharzia.

Scientifically known as Schistosomiasis or “schisto,” bilharzia formulates when infected adults and children urinate or defecate in fresh water, releasing eggs. These eggs

hatch and penetrate snails' tissue, multiplying within the tissue. Using the snail as a host, the parasite eventually emerges back into the water where it survives for approximately 48 hours. The parasite develops into a form that penetrates human skin. Once inside the body, female and male parasites can live, mate, and multiply up to seven years. The female releases thousands of eggs, some of which pass through the urethra (urinary schistosomiasis), some of which pass through the intestines (intestinal schistosomiasis), and some of which harbor in the body's tissue and veins, causing fever, inflammation, and chills (Montgomery 2015; "Schistosomiasis" 2014). When released through bodily functions, the eggs cause bleeding and pain, leaving sufferers vulnerable to HIV/AIDS, anemia, impaired cognitive ability, and organ disease and dysfunction ("Schistosomiasis" 2014).

With *Bilharzia* stemming from Sub-Saharan Africa's lack of safe, fresh water and lack of adequate sanitation, the disease kills around 534,000 Africans every year (Adenowo et al. 2015:196). Those most at risk spend a considerable amount of time in the water and typically have a low socioeconomic status along with poor educational access (Bustinduy et al. 2014:640). Naturally, Africans know *bilharzia* exists, but they simply cannot reverse their mode of life when their economic status depends on lakes and other bodies of water. With 76% of Sub-Saharan Africans living close to open bodies of water, they cannot entirely avoid using the water, especially when "the majority of the sub-Saharan population survives on between US \$1.25–\$2.00 per day" (Adenowo et al. 2015:201). The combined effect of being poor and having no other sources of livelihood forces the use of contaminated water. A vicious cycle exists between *bilharzia* and poverty.

Poverty pressures individuals into using contaminated water for activities both domestic and work-related, but when individuals contract bilharzia, they cannot fully engage in their livelihood, meaning that poverty persists. Poverty ultimately limits access to clean water and for combatting disease, so whether or not Africans work in the water, perform chores, or simply wade in it to cool off, contracting bilharzia coexists with daily life. To avoid making generalizations about Sub-Saharan Africa's causes of infection and to better understand the disease on a social level, consider two case studies on Nigeria and Uganda—both countries in Sub-Saharan Africa that suffer from bilharzia but also countries that suffer for distinct reasons. This aids in the understanding of bilharzia's biosocial linkages.

Uganda's booming fish industry accounts for 6% of the country's total GDP; it employs over 1.2 million people including fisherman, distributors, handlers, smokers, driers, and more, which means that workers risk contracting bilharzia on a daily basis (Keizire 2006:ii). In fact, four million Ugandans have the disease now, and 17 million people risk infection. Those residing in Uganda's fishing villages have the highest risk for contracting bilharzia, especially during the dry season when water levels decrease, forming small pools, essentially disease breeding grounds where fisherman will stand for extended period of time to catch fish in the deeper water (Odongo-Aginya and Doehring 2008:241). Small, shallow pools both facilitate the breeding of host snails and increase the potential contact between humans and parasites. Every day, on the shores of Busabala, Uganda, for example, around 800 people frequent the shore's fish market. The site offers one toilet, meaning that people must resort to the waters for relief. Although communities strive to increase the number of lakeside latrines, it remains an economic

challenge (Montgomery 2015).

When the average fisherman lives below the poverty line, only making 100,000 UShs, roughly \$30 USD, per month, avoiding contact with water remains difficult (Odongkara et al. 2006:09). Ugandan livelihood depends on risking contracting bilharzia due to constrained socioeconomic behavior. Because of transport issues and the lack of funding and of sales agents in remote areas, Ugandans cannot afford the proper amount of fishing gear, and often use worn out canoes or fish barefoot in the water. Theresa Maoung'a, a fish handler near Lake Victoria says, "I go and sell at the market for some little profit to sustain my life... People around here stay for long hours in the water. Schisto is rampant in the community because people do not use clean water... You see, this leads to poverty because when you are sick, you are unable to do your normal activities" ("Schistosomiasis in Lake Victoria" 2014). When poverty persists, bilharzia does, as well. Researchers performed a study of 446 Ugandans in the Musoli village along Lake Victoria. Of 217 females and 229 males, with an average age of about 26 years old, 73.4% of the individuals, most of them farmers, fishermen, and students, had bilharzia and still went to Lake Victoria more than 5 days a week. Poverty and low income does not limit daily activities; in fact, poverty perpetuates bilharzia (Tukahebwa et al. 2013:03). Ugandans see bilharzia in coexistence with daily life at this point; their livelihood depends on infected water.

Nigeria suffers at much higher numbers; 29 million people, the highest number in Africa, live with bilharzia, and 101 million people risk infection (Dawaki et al. 2015:02). Similar to Uganda and other Sub-Saharan countries, many Nigerian communities lack access to safe water. However, Nigerian bilharzia has distinctly local features: in 1993,

the World Health Organization “noted that the prevalence and intensity of the disease have increased in areas undergoing water resource development, especially irrigation. After the Sahel drought of 1973, following the Federal Government’s policy of large-scale irrigation and water conservation, several reservoirs were built” (Mafiana, Ekpo, Ojo 2003:78). In 1984, commissioners built the Oyan Reservoir, a multi-purpose dam for fish breeding, water supply, and irrigation. Nonetheless, the reservoir serves only as a water supply to water treatment plants in Lagos and Abeokuta due to poor use. With no nearby mechanized farms, irrigation hardly occurs. Creation of the reservoir forced over 1,000 people to relocate to Abule-titun, Ibaro, and Imalo-odo, three villages near the reservoir’s bank. This displacement and ultimate confinement triggered a huge outbreak of bilharzia among the three communities just within four years; bilharzia developed in 71.8% of adults and children (Mafiana, Ekpo, Ojo 2003:78-81).

Researchers met with afflicted community members to understand water contact practices and knowledge of the disease. Women mentioned their knowledge of bilharzia’s causes: “We get it from bathing, drinking and washing clothes with dam water,” and preschool-age children contract it by accompanying their mothers to wash, bathe, and fish, they revealed (Mafiana, Ekpo, Ojo 2003:81). One mother said, “I bathe my child in the water [reservoir] as there is no other source of water” (Mafiana, Ekpo, Ojo 2003:80). Even after acknowledging bilharzia’s accompanying pain and the limits it places on daily life, these communities, overall, did not consider bilharzia a serious disease because, as one village leader said, “the reservoir is our only source of income” (Mafiana, Ekpo, Ojo 2003:81). When water plays such a prominent role in economic and domestic life, the afflicted have no other choice but to use it. Poverty limits options for safe action; people

will continue to take necessary measures to sustain themselves, even if it means slowly compromising their health in the process.

Currently, in mass treatment campaigns, doctors use just one medication called Praziquantel to treat bilharzia. It costs roughly \$.25 USD per adult treatment, and one to two doses in a single day kills worms effectively, typically around 85-90%. A single 600mg pill costs about \$.08 USD, but no pediatric version exists for preschool-age children, who suffer at a 71.8% rate in the Nigerian case study and typically suffer at the highest rates throughout Africa. Praziquantel also requires a strong immune system in order to work, and because bilharzia puts people at risk for contracting HIV/AIDS, it treats these people less effectively (“Schistosomiasis and HIV”). To an American, Praziquantel may appear cheap, but “realistically, most sub-Saharan African countries cannot afford the estimated 1.2 billion tablets of Praziquantel required to treat 400 million individuals per annum for five years at a total cost of USD \$100 million” (Adenowo et al. 2015:202). Bilharzia reduction therefore requires foreign funding; the World Health Organization (WHO) plans to reduce morbidity by 2020 and proposes an entire elimination through medication by 2025. With the target populations as adults and school-age children, “periodic treatment of at-risk populations will cure subtle morbidity and prevent infected individuals from developing severe, late-stage morbidity due to schistosomiasis” (“Strategy: Control and Preventive Chemotherapy”). But is this enough, and is this truly possible without social intervention? Praziquantel is no cure-all pill; in fact, it does not protect against reinfection. The WHO keeps track of the most at-risk areas, but do they speak with communities? Do they examine behavior? Their plan mentions nothing improving the disease’s socioeconomic causes; it fails to see health

through a biosocial lens and instead sees medication as a solution.

Bilharzia requires biosocial awareness and treatment; while pills may cure diseases, they do not cure constrained behaviors and economies, and as the above case studies demonstrate, behaviors vary in different areas. Pills know diseases, but they do not know people. A qualitative approach—talking to those suffering and examining their conditions—is more effective than a quantitative approach that simply analyzes statistics and delivers medicine, because it responds to the challenges of the people, not the disease. Perhaps the WHO would consider altering their strategy to something more community- and education-based if they knew that in a study in Northern Nigeria where 63.8% of people knew about bilharzia and its causes, only 36.2% of people fully understood preventative measures. Moreover, only 34.7% of them sought treatment at a hospital or clinic (Dawaki et al. 2015:01). A mere 6.1% of study participants (23 out of 376 people) considered avoiding contaminated water to be a factor in preventing bilharzia (Dawaki et al. 2015:10).

With that said, pill distribution and local awareness do not guarantee a significant, clear-cut reduction in bilharzia; people will continue using the water for domestic and occupational needs because they do not see avoiding water as a preventative measure. Even after pill treatment, locals will remain in contact with the water and risk reinfection. Even if the WHO was able to fund Praziquantel treatment for the affected regions, there remains a plethora of other parasites and infectious diseases to which these same populations are vulnerable. Treating one disease through a pill will not prevent other infections. Thus, the benefits of educating both the affected communities and communities at risk can generate benefits well beyond combatting this disease, and

others, in a way that treatment via pill is incapable of doing. This is not to say that the WHO is not an organization without merit; it does, in fact, gather enormous amounts of statistics on disease-specific population health and disseminates this information globally via its website. However, their strategy for bilharzia lacks the social aspect of health; it requires community-based, participatory education programs that treat the people, not the disease. If sub-Saharan Africans cannot avoid the water, they must know how to take proper precautions before using it. On top of Praziquantel treatments, the WHO should provide mothers in Nigeria and occupational fishermen in Uganda with protective gloves and shoes for domestic work. Education programs in both areas would inform communities on preventative measures: seeking out hospitals and clinics rather than local chemists, boiling water before drinking or bathing, and restraining children when possible from bathing or swimming in contaminated water (Mafiana, Ekpo, Ojo 2003:81). Throughout Sub-Saharan Africa, people must be encouraged to adhere to and maintain these personal hygiene and sanitary practices to reduce bilharzia. A reduction in bilharzia requires more than medication; a biosocial response that recognizes socioeconomically specific behavior, though, will reduce bilharzia.

Continuing this further, consider that “health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (Ene 2009:08). Social and physical wellbeing can be neither obtained nor maintained without a contribution of the social environment. In order to treat health biosocially, health professionals and treatment campaigns need to combine the role that people play in health with the way science describes people and disease to generate an identity among a community of people. Social identities eventually generate change: “The way in which

people imagine themselves...structures their rapport with the social world around them and helps to construct...social...networks” (Nguyen 2005:265). If health professionals educate communities, the people will identify with other educated, diseased individuals; they can rise up as a community, as a social network to enact community mobilization and to make positive changes in cost-effective health policies.

Unquestionably, completely avoiding contaminated water will be difficult when poverty persists. Education will not eliminate poverty, but it will alleviate the disease-causing risks in constrained behavior. Through a newfound identity, bilharzia-infected communities can advocate for clean water and sanitation over time; many authorities in Sub-Saharan Africa do not make clean water accessibility a priority; therefore, through collaboration and communication, bilharzia-ridden communities can push for better health care while raising social awareness of their condition to construct a productive, positive role for themselves. They will, in turn, allow for more extensive, efficient global health care measures, attracting attention from the global health community who will see Africa not as a disease-ridden continent, but instead, as a web of locally intricate countries unfortunately plagued by socioeconomic disease-causing conditions.

Each country’s story differs from the next, from Uganda’s fish-dependent economy to Nigeria’s failed dam and contaminated reservoir. At the end of the day, public health faces a complex challenge. Now, more than ever, the field needs to take note of social interaction to mandate efficient social services, such as identity-forming, community-based education groups that can advocate for better health policies. This will better provide for Sub-Saharan African communities suffering from bilharzia and ultimately dispose of the disease-ridden image that the global health community has of

individuals in Sub-Saharan Africa

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