

# Tropical Diseases and their impact on Maternal and Child Health

Sumaiya Adam<sup>1</sup>, Hennie Lombaard<sup>2</sup>

<sup>1</sup>Consultant, Department of Obstetrics and Gynaecology, University of Pretoria, Steve Biko Academic Hospital, Pretoria, South Africa

<sup>2</sup>Head Maternal and Fetal Medicine Unit, Department of Obstetrics and Gynaecology, University of Pretoria, Steve Biko Academic Hospital, Pretoria, South Africa

Over a quarter of the world's population are at risk of parasitic infections. The majority of these infections are confined to the world's poverty belt, which is largely in sub-Saharan Africa. Dangerous, debilitating and chronic infections add to the burden of people already disadvantaged by poverty. Women constitute over 67% of the total population of Africa, and they suffer the most from the effects of poverty. Thus, a focus on African women is vital. While HIV/AIDS, tuberculosis and malaria are well known, the so called "big three" with substantive efforts to prevent and control these infections in communities, there are many lesser known infections that cause persistent morbidity. "Neglected tropical diseases" (NTDs) are the tropical infections once the "big three" have been taken out.

Major Neglected Tropical Diseases*	
Disease	Prevalence in Sub-Saharan Africa
Hookworm	198 million
Schistosomiasis	192 million
Ascariasis (roundworm)	173 million
Lymphatic filariasis (elephantiasis)	46 million – 51 million
Onchocerciasis	37 million
Active trachoma (river blindness)	30 million
Loiasis	≤13 million
Yellow fever	180 000
Human African trypanosomiasis	50 000 – 70 000
Leprosy	30 055
Leishmaniasis	19 000 – 24 000
Dracunculiosis	9585
Buruli ulcer	>4000

(Hotez PJ, Kamath A. Neglected Tropical Diseases in Sub-Saharan Africa: Review of Their Prevalence, Distribution, and Disease Burden. PLoS Negl Trop Dis. 2009 August; 3(8): e412.)

Women and children who live in unhygienic environments with limited access to clean water and sanitation face the biggest threats of NTDs. Pregnant women also face special risks for some NTDs. People in rural South Africa who rely on rivers for drinking water and bathing are more likely to be affected by some NTDs.

NTDs have terrible social and economic consequences, as well as a major impact on the health and well-being of those infected. Affected pregnant women are at high risk of giving birth to low-birth weight babies, of poor milk production, and of babies who fail to thrive. Hookworm is a particularly significant infection in pregnant women. In sub-Saharan Africa, up to a third of pregnant women have hookworm infections. The resultant anaemia makes the pregnant women three times more susceptible to death during childbirth.

Blood loss caused by hookworm infections in children robs children of iron and prevents them from growing and developing, as well as gaining IQ points and learning in school. Hookworm is seldom recognized as the reason that the poorest people in Africa cannot escape poverty. Chronic blood loss in children produces stunted and mentally disabled adults whose future wage earning is reduced by 40% or more. Sadly, yearly deworming for hookworm infection would cost less than 30 cents per patient annually.

NTDs also worsen the effect of other major infectious diseases or make individuals more susceptible to them. Studies have shown that many people have one or more NTDs at the same time as they have HIV or malaria, worsens the intensity of those diseases. In addition, helminthic infections and schistosomiasis may serve as an important factor in the transmission of HIV/AIDS. In many parts of sub-Saharan Africa the geographic overlap between HIV/AIDS, tuberculosis and malaria is extensive. Africa's catastrophic burden of disease resulting from HIV-associated tuberculosis and severe malaria in HIV-infected individuals is emerging as one of the first great human tragedies of the 21st century.

Social stigma is a major consequence of the NTDs. Many of these infections cause disability and disfigurement, resulting in individuals being shunned by their families and communities. Individuals who are stigmatized are less likely to leave their homes to seek diagnosis and treatment. Social

## Correspondence

S Adam

email: sumaiya.adam@up.ac.za

stigma is particularly demoralizing for young women because they are often left unmarried and unable to work, in setting where the social "value" of a woman has much to do with her marital status.

For example, female genital schistosomiasis affects about 50 million African women. It produces acutely painful ulcers over the uterus, cervix and lower genital tract. Women who are affected are stigmatized and are often socially isolated and depressed. In addition, recent data shows that this common condition is associated with a three-fold increase in the likelihood of acquiring HIV/AIDS during sex. Indeed, when you look at a map of where HIV/AIDS occurs in Africa, there is a remarkable overlap with the form of the schistosomiasis associated with genital disease. But the most amazing thing is that female genital schistosomiasis is preventable by treating at-risk females once a year with praziquantel. This would cost 32 cents per patient per year.

In addition, tropical diseases can potentially reduce fertility in a variety of ways. Filariasis and schistosomiasis have been associated with upper genital tract infection and pelvic inflammatory disease. Partial fallopian tube occlusion can result in life-threatening ectopic pregnancies. Swelling of the genitalia can impede sexual intercourse, thus causing infertility. In addition, studies have suggested that schistosomiasis may inhibit reproductive hormone function as a result of the immune response to the schistosomal eggs. Also, all parasitic infections have the potential to reduce fertility by causing anaemia or malnutrition, or generally damaging overall health. It is well known that infertility makes a woman in Africa more vulnerable to different forms of abuse.

NTDs also have a major impact on the productivity of individuals and the economic prospects of communities and nations. Children are disproportionately affected and often suffer long-term consequences of the disease. The NTDs are disease of the poor that help to keep them poor. They also negatively affect the economic development prospects of the countries in which these people live.

Success at integrating tropical disease control into the fight against HIV/AIDS, tuberculosis and malaria could dramatically reduce the number of life years lost from premature death and disability. New vaccines under development for HIV/AIDS and malaria also need to take into account the effect of poly-parasitism. The cost of controlling tropical diseases is modest. Thus it is surprising that those aiming to control HIV/AIDS, malaria and

tuberculosis have largely ignored the collateral benefits from reduction in anaemia, worm burdens and susceptibility to HIV/AIDS, tuberculosis and malaria. Interventions are inexpensive - for less than R1.00 a year we will be able to prevent at least 3 of the NTD - effective and in keeping with achieving the Millennium Development Goals.

As we look to the future, it is also important to invest in research for new technologies that could help to address NTDs in more effective and efficient ways. It is also critical to develop new drugs to combat the NTDs. Currently, we are dependent on four drugs to combat the seven most common infections. At the same time we have to seek to prevent and treat NTDs. We need to work with communities to address the underlying risk of NTDs. These risks overwhelmingly relate to unsanitary living conditions of the poor. It is important for people to better understand the importance of good hygiene, to have better access to safe water and sanitation. Unfortunately, these developments are not likely to take place quickly.

There should be increased awareness and understanding of the importance of gender in determining health outcomes and the crucial role that women play in health care within families and the wider society. However, experience has shown that sustaining women's participation in health-related projects is difficult. Thus, the use of non-conventional methods in training non-healthcare professionals deserves serious consideration.

Controlling NTDs can have a profound impact on the poorest and most vulnerable people. It can help to free them from a terrible burden of illness and disability and premature death and poverty. It can also enable them to develop properly as children and become productive adults. There are low cost, highly effective ways of preventing and treating NTDs that need to be scaled up. There needs to be political will both globally and within affected countries to scale up the fight against these scourges.

#### References

1. Okwa OO. Tropical parasitic diseases and women. *Ann Afr Med* 2007;6:157-63.
2. Hotez PJ, Fenwick A, Savioli L, Molyneux DH. Rescuing the bottom billion through control of neglected tropical diseases. *The Lancet* 2009;373(9674):1570-5.
3. The Cochrane Infectious Diseases Group. Neglected tropical diseases. [Cochrane review]. In *The Cochrane Library*, August 2010.

Open access to O&G Forum website

[www.ogf.co.za](http://www.ogf.co.za)

User ID - inhouse / Password - 2011



**O&G FORUM**