Precarious Perch

The introduction of the Nile perch into Lake Victoria, Africa's largest lake, has an intertwining history with the spread of HIV in the region

Lake Victoria is Africa's largest lake by area, and is bordered by three countries, namely, Uganda, Tanzania and Kenya. Almost 49 per cent of the lake belongs to Tanzania, 45 per cent to Uganda and only 6 per cent to Kenya. According to the Lake Victoria Fisheries Organization website, fish catches from Lake Victoria provide over 800,000 tonnes fish annually, worth about US$590 mn. The lake fisheries support almost 2 mn people and meet the annual fish consumption needs of almost 22 mn people in the region. But the fisheries economy is highly dependent on one species, the Nile perch (*Lates niloticus*), the export of which makes an important contribution to the national economies of three riparian states.

The ecology of Lake Victoria and the epidemiology of HIV are both extremely complex.

However, some fishing communities are plagued with a high prevalence of human immunodeficiency virus (HIV), and fishery workers are widely seen as highly vulnerable to the virus. Both HIV and the Nile perch have a long history in Lake Victoria, lengthier than many realize.

HIV is thought to have originated in southern Cameroon around 100 years ago before spreading to Kinshasa on the western side of the vast Democratic Republic of the Congo. Moving east, the virus established itself in Uganda, Tanzania and Kenya sometime in the 1950s, probably via Kisangani. HIV may have spread across Uganda first, but all three countries around Lake Victoria had a serious epidemic by the 1980s, when AIDS was discovered, with HIV being identified as the cause of AIDS very soon after. By the 1990s, the epidemic peaked and declined, before stabilizing at around 5-7 per cent in the three countries by the early 2000s, and remaining at about that level for the following decade.

Although the Nile perch (along with a non-native tilapia species) was only introduced to Lake Victoria in the early 1950s, the possibility of introducing non-native species had been discussed by colonial administrators almost 100 years ago. The effects of overfishing in the lake were already considerable and had attracted the attention of the administration. Re-stocking the lake with non-native species had its opponents from the start, but it was not until after the Second World War that the introduction occurred. Objections notwithstanding, the introductions eventually went ahead, albeit surreptitiously, and the entire issue was always highly controversial.

Changing conditions

Until the 1950s, there was probably no connection between HIV and the Nile perch. But from that decade onwards in Lake Victoria, the two became curiously intertwined. The ecology of Lake Victoria and the epidemiology of HIV are both extremely complex. However, the history of the Nile perch explosion does shed some light on the changing conditions in the lake zone, which go together to form the determinants of health there, that is, the factors that affect the health of

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whole populations, what diseases they are likely to suffer from, how long people will live, what they will die from, the quality of their water supply, what they eat, and a whole lot more.

The Nile perch became the number one fish in Lake Victoria in the 1980s, by which time HIV had already spread across the whole of East Africa, infecting hundreds of thousands of people. Fish catches increased in volume by several hundred percent, resulting in rapid increases in human population, industrialization, depletion of the environment and various negative processes, in addition to some positive processes, such as a huge increase in economic activity, along with the many attendant benefits.

What, then, are the factors that result in the rapid spread of HIV, and what factors may retard its spread altogether? Good infrastructure is said to be one of the most important factors in the spread of the virus. Southern African countries with serious HIV epidemics are well connected, with relatively well-developed road, rail and other networks. In contrast, infrastructure is less well developed in eastern Africa and quite sparse in western Equatorial Africa. Yet, infrastructure is fairly good in many West African countries so, on its own, infrastructure may not explain every variation in HIV prevalence. But the huge and almost entirely undeveloped Sahara Desert has probably protected countries directly to the north from the spread of HIV, and perhaps even many countries to the south, which partly constitute the desert.

While infrastructure around Lake Victoria is relatively good, especially in the cities, additional factors have combined to increase HIV transmission. The population grew considerably, and became more dense, as a result of the Nile perch explosion. These can certainly contribute to the extent of an epidemic. More people also means increasing demands on

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Fishermen at a Lake Victoria fish landing centre. Both HIV and the Nile perch have a long history in Lake Victoria, lengthier than many realize

the environment, with trees being cut down, land being farmed more intensively, pollution from human, industrial and agricultural waste increasing, and so on. The quality of housing, water, air and other environmental resources suffers, with consequent impacts on health.

But the pull factor in Lake Victoria was money. For most people, a decent income would have been enough. Those living on the lake before the Nile perch boom had struggled to make ends meet, but things suddenly changed, and it was possible for more people to subsist, even to get rich. The population explosion of fish in Lake Victoria was a crucial component of the environment in which HIV prevalence increased, becoming the highest for all three countries just when they were suffering from a combination of severe global and domestic economic problems in the 1980s and 1990s.

It is vital to bear in mind that there are several ways that HIV can be spread, and they divide into sexual and non-sexual modes. Whether sex between men and women or people of the same gender, and whether it is for recreation or procreation, there may be a risk of HIV being transmitted.

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Non-sexual routes of infection include mother-to-child transmission, intravenous drug use, unsterilized healthcare practices, certain traditional practices and several common cosmetic practices. All of these may increase in an area where population is rising and the economy is booming.

Of course, similar phenomena may prevail anywhere that the local economy is boosted by some lucrative activity, such as coffee, pepper or sugar production, gold or mineral mining, flower growing, tourism and so on. Populations have grown and economies have boomed (and the opposite has happened) countless times all over the continent without very high rates of HIV necessarily resulting. There are even other fishing areas, such as Lake Kyoga in Uganda, Lake Tanganyika, much of the coast of Tanzania and Kenya, and numerous places elsewhere, with very low HIV prevalence. Therefore, there may be something about the human habitats around Lake Victoria, or more likely a combination of things, rather than something about fishing, that has resulted in HIV prevalence as high as 27 per cent in Suba Bay, compared to about 6 per cent in Kenya, overall.

Many studies of fishing communities around Lake Victoria have been carried out, especially in places where HIV prevalence is known, or suspected, to be high. Fewer studies have looked at fishing communities around East African lakes where HIV prevalence is low. Lake Kyoga is an exception, but details of the low prevalence found there have not yet been published.

However, some studies have looked at different occupational groups found in fishing communities, such as people engaged in catching fish, or in selling or processing fish, and people who engage in non-fishing activities, such as those working in the hospitality industry, farmers, small business people, and the like. Findings vary, with research showing that HIV prevalence in some areas is higher among those who are not engaged in catching fish, even people who are not connected with the fishing industry. Other research has found that HIV prevalence is exceptionally high among boys who wash cars in the lake in Kisumu.

HIV

Thus far, much of the research is divided about the huge variations that exist between HIV prevalence in different communities, professions and locations. Also unclear is the variation in conditions, demographics, migration patterns, cultural practices, traditions, and a whole host of factors that may either increase or retard the spread of HIV. Some studies suggest that there are many migrants who spend long periods away from home,

others describe a pattern of people moving short distances to engage in fishing practices, and there are those who argue that entire families moved to lakeside areas so that men could catch fish while their wives and families could process and sell the fish.

It seems likely that all these scenarios are possible, and several more might be added. There is a good deal of innuendo about why so much variation exists in HIV epidemics and sub-epidemics but much of the research is inconclusive, and certainly does not allow one to see a 'big picture'; we are often limited to snapshots, carefully selected aspects of a handful of locations, 'more and more about less and less', one might say.

For example, a lot has been written about 'traditional practices' that may contribute to HIV epidemics (generally practices relating to sex), attitudes towards (sexual) risk-taking behaviour, commercial sex work as a response to scarcity and poverty, gender and power, and a whole lot of other factors which are probably just as much of part of people's lives across the whole continent, in high- and low-HIV-prevalence areas.

But the increase in economic activity brought changes in all kinds of human behaviour, not only sexual, so this includes healthcare and cosmetic services, which are likely to have contributed to the spread of HIV in populations around the lake.

Let us accept that we all need to be careful about who we have sex with and how often, whether to use condoms, and other good pieces of advice.

But we should likewise be aware of the many non-sexual risks of HIV transmission because, however high or low the risk, they are certainly common. Some of the practices around Lake Victoria that favor HIV transmission may be traditional, such as sexual practices and traditional skin-cutting.

Yet, there are far less serious HIV epidemics in other communities in the region, such as South Sudan, that have similar traditions, but less economic success; tradition alone does not explain HIV around Lake Victoria. Economic change and everything that comes with it must be considered as well.

In Africa, HIV hits the richest countries such as South Africa, Botswana and Zambia the hardest. People in rural areas, less affected by economic and social changes, have been less likely to get HIV than their urban and wealthy compatriots.

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Thus, the economic growth that populations around Lake Victoria enjoyed from the 1980s would have contributed in several ways to the spread of HIV. Economic growth brings changes in the services people seek, and some of these increase the risk of HIV transmission.

Specifically, as communities around Lake Victoria got more income and better transportation, people possibly received more skin-piercing procedures in healthcare facilities, such as injections and infusions, and they may have received more skin-piercing cosmetic services, such as manicures.

We probably all receive injections, sometimes several every year, and this is especially true when pregnant. We take our children to doctors and hospitals for vaccinations and curative injections, minor and major operations and many other things.

Old people may have frequent need of medical treatment. Sexually transmitted infection clinics, dental surgeries, vaccination units and a multitude of services that most, perhaps all, people use at times, are run by qualified personnel, and may generally be safe places.

Poor training

But there are occasions when staff, equipment and supplies are short, when there is too little time or training, and things are not as safe

as they should be. We need to watch out for such occasions, reused syringes or needles, dirty equipment, a nurse who attends to us without washing after attending to patients, and so on. More importantly, we need to watch out for these happening when we bring others to a health facility, particularly children and infants.

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Even hairdressers and suppliers of cosmetic services, such as manicures and pedicures, can take shortcuts and do things carelessly, or save a few shillings by reusing razors, safety pins and other instruments that pierce the skin. Traditional healers may do the same, and the cleanliness of the equipment may not be of any importance to the treatment; but it is of great importance to the client if they want to avoid scabies, bacterial infections, hepatitis or even HIV.

Traditional circumcisions and other practices that involve cutting through skin, that involve people coming into contact with the blood of others, can all be risky. While we may wish to continue with some or all of these, it is not that difficult to make sure that skin-piercing instruments are only used once, or are sterilized properly, which means being boiled for several minutes.

There are two useful rules of thumb about HIV: knowing a person's HIV status does not tell you anything about their sexual behaviour, despite what you may assume; and knowing about someone's sexual behavior, or believing you know, does not tell you anything about their likely HIV status. To find out how someone is infected, it is necessary to find out all their non-sexual, as well as all their sexual, contacts; not just who they slept with and what their status is, but also what kind of medical, traditional or cosmetic services they have used which may have been less sterile than we would like.

Looking at the twin histories of HIV and the Nile perch does not tell us why the virus wreaked such havoc in the Lake Victoria area. But it highlights some of the many factors that came together at around the same time, resulting in a shared 'sub-epidemic', with prevalence figures exceeding those found in most other parts of Kenya, Uganda or Tanzania.

In common with the Nile perch boom itself, it is impossible to turn the clock back and undo things that occurred many decades ago, to reverse the numerous factors that contributed to Lake Victoria's depleted ecology or its terrible HIV epidemic.

But it is possible to negotiate the future, and manage how people may continue to live their lives around the lake. Everyone living close to the lake, whether fisherfolk or not, can broaden their awareness of how HIV can be spread in their villages, streets and communities, and of how their lives affected by, our local and global environments. In addition to things that are out of our hands, the risks include many things that we can control and influence.

For more

www.fao.org/newsroom/common/ecg/1000544/en/hivfishingEN.pdf
HIV and AIDS in Fishing Communities

www.kmcc.org.ug/documents/12560/0/KMCC%20MARPs%20Fishing%20Communities%20Synthesis%20June%202014.pdf
Most at Risk Populations—Fishing Communities and HIV/AIDS in Uganda

http://pubs.worldfishcenter.org/resource_centre/HIV-AIDS-AfricaFisherySector.pdf
HIV/AIDS in the Fisheries Sector in Africa