

## SPECIAL ARTICLES

### THE POVERTY-HEALTH NEXUS: A CONUNDRUM FOR A FULFILLING LIFE\*

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#### Introduction

“Wowo nkwa na wowo adee”, is a popular Ghanaian saying in the Twi language which means that if you have life then you have a treasure. You can have life if you are healthy or if you are not involved in an accident. There is also another saying, “The wealth of a nation is the health of its people”. Both sayings emphasize the importance of health in wealth creation in a household or a country. Bad health drives people into poverty because they have to spend their money on seeking health care or they become invalid and cannot work to create wealth. When someone in the household is afflicted by ill health another person may stop work and provide care and so the loss of productivity in the household is compounded.

Bad health may result from genetic connections, behavioural factors, environmental factors, and nutrition. There is very little that a person can do if her/his parents pass on their “bad” genes to her/him and acquires some disease. Since one cannot curse ones parents one has to cope with the situation. These days by the help of genetic markers the linkages between disease and family members can be mapped and managed. Bad lifestyles like indulgence in drugs and excessive drinking can get one into serious illness. It is not only drugs and drinks that can cause illness, as it is said, “Too much of everything is bad”. We should be ware in the way and extent to which we indulge in the world’s pleasures. You may remember cases of aged men who in their attempt to exhibit their manly prowess or try to over-satisfy their partners collapse and die in the room. If you live in an unsanitary environment or work in a dangerous environment you may contract some disease. There is another saying, “We are what we eat”. If you do not eat well you can lose part of your immune system and therefore become more susceptible to disease.

Poor people in developing countries struggle continually to fight hunger, malnutrition, ill health, and deepening poverty. Poverty has a big role to play in the circumstances that lead to contraction of disease or one’s ability to dispense with or cope with disease.

Many poor people contract diseases that can be avoided if they were not poor and some die of them. There is another saying in Twi, “Ohia ye yadee” or poverty is a disease. Poverty and health are therefore intrinsically linked. I will attempt in this lecture through some of my own research findings and those of the colleagues I have worked with over the years, and others to bring out some of these linkages and how they prevent people from living a fulfilling life.

#### Poverty in Ghana

Of the 162 million ultra-poor (earn less than US\$0.50 a day) people in the world, three-quarters of them live in Africa, and sadly, whereas other parts of the world are reducing the size of this group, the numbers are increasing in Africa<sup>1</sup>. Rural poverty will continue to be prevalent than urban poverty during the next several decades<sup>2</sup>. For instance, for Ghana, 86 percent of the total population living below the poverty line in 2005/2006 was in the rural areas<sup>3</sup>.

Ghana is an emerging success story in Africa and in a couple of years will become the first African country to achieve the Millennium Development Goal of halving its national poverty rate<sup>4</sup>. Annual growth has averaged almost 6 percent in the last five years and poverty has been reduced by 24-percentage points in the last decade. Poverty estimates from the Ghana Statistical Service, suggest that the share of the population living in poverty was reduced from 51.7% in 1991/92 to 39.5% in 1998/99 and 28.5% in 2005/2006<sup>3,5</sup>. The past decade has shown that economic growth can help lift people out of poverty. Experience has shown that growth is necessary but not sufficient, and that the pattern of growth is critical in determining the speed and extent of poverty reduction. Development strategies that have generated macroeconomic growth have also often widened the gap between the rich and the poor and therefore skewed access to assets for maintenance of decent livelihood. The Ghana Statistical Service<sup>3</sup> concludes that in Ghana poverty reduction benefited from favourable economic growth in the last 15 years. However, the decline in poverty would have been even better if it had not been offset by increasing inequality. For instance, the distribution of the Ghanaian population living below the poverty line ranges from one percent in Urban Coastal areas to about 50 percent in Rural Savannah areas<sup>3</sup>. Although poverty has been declining in the Savannah areas over the last seven years, the contribution of Rural Savannah to poverty in Ghana has consistently been increasing – from 33 percent in

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1991/92 to 37 percent in 1998/99 and to about 50 percent in 2005/06.

Indications are that Ghana will also be able to cut hunger by half by 2015. The International Food Policy Research Institute's (IFPRI) Global Hunger Index (GHI) – a combined measure of the percentage of undernourished in the population, prevalence of underweight in children under the age of five, and the under-five mortality rate – shows that Ghana has made considerable progress towards reducing hunger<sup>6</sup>. From 1990 to 2007, the GHI score fell by more than 10 points. However, results from research by IFPRI indicate that Ghana has to accelerate its annual GDP growth rate from the recent 5.5 percent to 7.6 percent to achieve middle income status by 2015<sup>4</sup>.

### **Malaria and Poverty**

Good health and economic prosperity tend to support each other. Let me devote a little bit of time to malaria, a disease whose impact in the developing world has been phenomenal. Most of the conclusions may apply to other diseases. There are 300 to 500 million cases of malaria every year, and between one and three million deaths, mostly of children, attributed to the disease. Every 40 seconds a child dies of malaria, resulting in a daily loss of more than 2,000 young lives worldwide<sup>7</sup>. Malaria kills over a million people each year, mostly in Africa, according to the World Health Organization (WHO). More than 90 percent of deaths from malaria in 2006 occurred in Africa, where 45 of the 53 countries are endemic for the disease<sup>8</sup>. Cost of funerals for the death impose substantial financial burden on surviving family members. These estimates render malaria the preeminent tropical parasitic disease and one of the top three killers among communicable diseases<sup>9</sup>.

Malaria has been called the epidemic of the poor. The poor is susceptible to malaria infection because they cannot afford good preventive measures. The female anopheles mosquito which carries the plasmodium parasite that causes malaria operates in the night when most people are asleep. Poor persons sleep and share rooms which are not properly protected from the expeditions of mosquitoes and so the insects enter and roam the rooms freely biting one person and another and spreading the parasite if there is an infected person in the room. During research work some years ago in Ifakara, Morogoro Region, Tanzania, more than 70 mosquitoes were captured in one room overnight through surveillance in a poor community. One can imagine what the mosquitoes would do to the inhabitants of the room if they were not captured. When the poor is infected many of them cannot afford healthcare. For those who seek healthcare, many of them purchase only part of the prescription. As a result the parasite develops resistance and the next episode of infection becomes more severe. While traditionally considered a rural disease, malaria is becoming of increased concern

among the poor in urban Africa. It is an aspect of ill health that negatively affects adult productivity and hampers the accumulation of human capital in younger generations. In economic terms, the total household cost burden of malaria is high in Africa, especially for the very poor. Total costs (direct and indirect) of malaria have been estimated to range between 5 and 18 percent of household income in four African countries. A number of studies have demonstrated a significant relationship between growth in gross domestic product (GDP) per capita and the burden of malaria<sup>10, 11</sup>. The results suggest that countries with a substantial amount of malaria grew 1.3 percent per year less (controlling for other influences on growth), and that a 10 percent reduction in malaria was associated with 0.3 percent higher growth per year<sup>9,10,11,12</sup>. In its entirety, the economic impact of malaria has been estimated to cost Africa \$12 billion every year. This includes costs of health care, working days lost due to sickness, days lost in education, decreased productivity, and loss of investment and tourism<sup>13</sup>. In some countries with a heavy malaria burden, the disease may account for as much as 40 percent of the public health expenditure, 30–50 percent of in-patient admissions, and up to 50 percent of out-patient visits<sup>14</sup>. To the extent that slow economic growth limits funds for malaria control, there is a vicious circle of poverty and malaria that diminishes economic opportunities for a large number of the world's inhabitants. Indeed, the loss of human capital and lower productivity results in a lower economic growth rate. This in turn negatively affects the poor who are stuck in a vicious circle of poverty and malaria. The link of malaria to poverty is ultimately a link to lower economic growth since malaria exacerbates poverty, which is a contributing factor of lower economic growth. Ill health through malaria means lower income due to lower productivity, and this in turn results in lower economic growth and higher poverty. Furthermore, high prevalence rates of malaria among the most vulnerable groups have a double effect of limiting poverty-reduction strategies and seriously impeding the accumulation of human capital by these groups. The health consequences of malaria vary in terms of severity, but the global impact of malaria on human health, productivity, and general well-being is profound. Insecticide-treated bed nets have been found to be effective in controlling malaria. In a classic randomized controlled trial of insecticide-treated bednet involving 400,000 children, it was found that insecticide-treated bednets could reduce overall childhood mortality by an average of around 20 percent<sup>15</sup>.

Greater coverage of insecticide-treated bed nets is a priority in malaria-affected areas. Insecticide-treated nets will work if at least one third of the whole population uses them. To increase access some countries are subsidizing the nets for poor people through budgetary allocations and donor programs. The Tanzania National Voucher Scheme has been used to deliver subsidized

insecticide-treated mosquito nets to pregnant women and infants. The Scheme has achieved nationwide coverage in less than two years. However, the design of the bed nets may not be useful to the poor many of whom do not sleep on beds. The nomenclature should perhaps change to accommodate the reality of sleeping by the people they are supposed to protect.

Studies in Niger have come up with different methods for controlling malaria that focus on environmental factors. Remedies are as simple as getting people with shovels to fill in low spots, where pools of water collect during rainy season. Spreading seeds from the nim tree twice a week can halve mosquito populations. The seeds contain a chemical that kills mosquito larvae. Scientists are developing a biological method for malaria that uses larvae-eating fish to control mosquito populations in rain-fed pools. These inexpensive ways of controlling malaria can be useful in poor communities which cannot afford insecticide-treated nets and insecticide sprays.

In its second general report in 1927, the Malaria Commission of the League of Nations stated that “of all indirect methods of reducing malaria, the Commission attaches most importance to general schemes of bonification which aim at improving the economic and social condition of the people and their general well-being and standard of life<sup>16</sup>. Dr Sydney James, a noted British malaria expert and scientific advisor to the Malaria Commission, who was sent to Kenya and Uganda in 1929 by the British government to study the malarial situation, reported that “economic improvement (of the peasantry) is the matter to which attention should first be given<sup>17</sup>. More recently Packard, noting the case of Zambia, suggested that long-term sustainability requires higher levels of economic development and improvement in the economic status of the population<sup>18</sup>. Economic control of malaria and for that matter, other diseases require simultaneous advances in social and economic development. Therefore efforts to control malaria should include social, economic, and political context, in addition to biomedical solutions in the design of appropriate control programs.

### **Schistosomiasis**

Schistosomiasis is a parasitic disease second only to malaria in its prevalence. It affects more than 200 million in 74 countries including Ghana. People become infected with schistosomiasis when they are in contact with fresh water in lakes and slow-moving streams infested with snails that harbour the schistosome worms. In rural areas and poor communities people use such streams for bathing, washing clothes, recreation, or collecting aquatic plants for food or thatching houses and in so doing, they contract schistosomiasis.

In a study we conducted on the Densu River Basin to find a socio-economic model for controlling schistosomiasis, the teenagers said that contracting the disease

and urinating blood was part of growing up and assured virility when they become adults.

### **Helminthic Infections**

Worms cause malnutrition, even in adequately fed persons, because they drain the food supply through diarrhoea, they cause anaemia from intestinal bleeding. Poor communities lack sanitary facilities for disposal of human waste, which perpetuates the cycle of contamination of soil with numerous kinds of worms. Lack of easy access to water makes it difficult to keep hands and food preparation areas clean. Consequently, soil-transmitted helminths are virtually found everywhere in slums, shantytowns and rural communities. Helminthic infections have been shown to increase susceptibility to HIV acquisition and likelihood of transmitting HIV.

### **HIV and AIDS**

HIV continues to spread, and most of the 33 million people infected live in poor countries. By 2010 there will be over 19 million AIDS orphans in sub-Saharan Africa. These children, mostly not infected themselves, often suffer from psychological problems such as depression, anxiety and post-traumatic stress. They have no access to sufficient food, health, education and shelter. They are left without traditional knowledge since mechanisms for transferring knowledge from one generation to another is disrupted, causing serious information gaps for survival.

HIV/AIDS is not just a health problem but a development problem given how it is contracted and its impact on productivity, household cohesion and management of the disease. Most people who become HIV-positive and who die of AIDS in developing countries, especially in sub-Saharan Africa, are now women. Moreover, it is principally the young who are becoming HIV-positive. Poverty is highly linked to HIV infection when poor young female adults are enticed with money by unscrupulous older male adults who may be infected with the virus; dire poverty and inability to feed their children, dependence to earn a livelihood, and fear of impoverishment drive many women into risky sexual relationships including prostitution. AIDS prolongs and deepens poverty, making it hard to escape from it. Hit by this syndrome, the poor lose their ability to work, to feed themselves and their families, to ward off diseases, to maintain their assets, to transmit experiential knowledge to their children and other people, and to remain connected to their communities. Eventually they lose their lives and their contribution to society is totally lost and surviving families spend money to conduct their funerals. By killing people in the prime of their lives, when they would normally be raising their children and practicing their professions, AIDS erodes the social capital that makes communities function. An HIV-affected household's risk of food

insecurity and malnutrition increases because sick family members cannot work, family members who are well must spend time caring for the sick person instead of working, income declines while healthcare expenses increase. Without a nutritionally balanced diet, which most poor households cannot provide, HIV infected persons face an increasing risk of opportunistic infections.

AIDS has a direct impact on rates of economic growth in the most affected developing countries. There is a direct relationship between the extent of HIV prevalence and the severity of negative GDP. When the rate of HIV in a population reaches 5 percent, per capita GDP can be expected to decline by 0.4 percent a year. And when HIV reaches 15 percent, a country can expect an annual drop in GDP of more than one percent<sup>19</sup>.

### Diarrhoea

Diarrhoea is a deadly disease which has been overlooked and undercovered. The disease kills more children than either malaria or AIDS, stunts growth, and takes adults and children away from work and school, reducing productivity and the chances for a better future. According to the WHO diarrhoea kills about 1.6 million children under five every year<sup>14</sup>. A simple practice of washing hands regularly can reduce the incidence of diarrhoea but in many poor communities water is difficult to come by. When available, the water is obtained from unreliable sources like open wells.

Luckily a low cost therapy, zinc, has been found to be effective in controlling diarrhoea. Administration of 20 mg of zinc daily for about two weeks has been able to combat an episode of diarrhoea and provide protection for about three months which is long enough to see a family through the rainy season which is the peak period for the disease. The cost of the therapy is only 28 US cents. If oral-rehydration therapy (ORT) is added the cost is just about 30 US cents, which should be affordable by many families, but the reality is that many poor families cannot afford it. Thus, it has to be supplied free of charge by the government or covered by health insurance.

Rotavirus vaccine trials going on now may someday add diarrhoea to the diseases which can be prevented from infancy through routine vaccination programs. For the meantime, poor communities have to be provided with safe water and hand washing education has to be intensified as preventive measures and zinc made accessible to families as curative measure.

Closely associated with diarrhoea is cholera which is an acute intestinal infection caused by ingestion of food or water contaminated with the bacterium *Vibrio cholera*. It has a short incubation period, from less than one day to five days, and produces an enterotoxin that causes copious, painless, watery diarrhoea, sometimes accompanied by vomiting, that can quickly lead to severe dehydration and death if treatment is not promptly

given. Cholera is closely linked with environmental management. The absence or shortage of water and sufficient sanitation with a generally poor environmental status are the main causes of the disease.

### Malnutrition

Overall, malnutrition combined with micronutrient deficiency is widespread among very poor people and is responsible for suppression of immunity through all three routes: physical barriers, humoral immunity, and cell-mediated immunity.

Epidemiology has long recognized the importance of adequate nutrition for protection from disease. In the late 1960s, the WHO officially acknowledged the important synergies between malnutrition and infection. An individual's susceptibility to any disease depends on the strength of the immune system, which among other factors is affected by nutrition, stress, and the presence of other infections and parasites. Both under nutrition and micronutrient deficiency, even in the absence of readily observable symptoms, weaken every component of the immune system, both adaptive and non-adaptive responses. Protein deficiency has been shown to impair resistance to tuberculosis, for example, by preventing containment of the *Mycobacteria* within the primary lesions<sup>20</sup>.

Maternal malnutrition in general and deficiencies of specific micronutrients, such as Vitamin A, are associated with greater risk of vertical (mother to child) transmission of HIV. Malnutrition in its various forms promotes viral replication and consequently can contribute to greater risk of vertical or sexual transmission. The onset of full-blown AIDS, and even death, may be delayed in well-nourished individuals who are living with HIV. Diets rich in protein, energy, and micronutrients can help opportunistic infections arising out of HIV. However, the poor cannot afford such diets and so cannot cope with HIV to any reasonable extent.

The risk of infection of HIV is heightened by high prevalence of such cofactor conditions, which decrease immune response in HIV-negative persons and increase viral load in HIV-infected persons.

Parasitic and infectious diseases interact with malnutrition. Malnourished people are more vulnerable to those diseases, and their illnesses are more severe than those of well-nourished people. Parasites also aggravate malnutrition by increasing calorie requirements and draining nutrients.

Early childhood nutrition programs which tend to keep children in school also tends to reduce malnutrition among poor children and so they must be encouraged. Programs like Food for Education (School Feeding Program – children are fed in school, and Food for Schooling Program – families are given food if their children attend school) tend to empower future generations by educating today's children. By combining the School Feeding Program and the Food for School Program, governments can alleviate hunger, feed devel-

opment, and reduce poverty in the long run. Children need food to learn; families need food to make the most of education<sup>6</sup>.

Recent studies have shown that undernutrition has a whole range of effects that impede not only children's nutrition and development in the short term, but also their cognitive abilities and productivity in adulthood, with measurable economic impacts. They have also shown that the window of opportunity for addressing child nutritional needs in ways that produce healthy, productive adults lasts from conception through age two. After that, the effects of undernutrition are largely irreversible. By addressing the large and severe problem of early childhood undernutrition in many poor countries, policymakers could maximize the effectiveness of investments designed to achieve overall development goals. Without greater attention to nutrition, increased child mortality, morbidity and impaired intellectual development are inevitable.

### Seeking Health Care

Poor people often do not attend clinics when they are sick or they delay before they seek health care and the result is that the illness becomes serious or death ensues. During field research work about ten years ago we encountered seriously ill children who would have been left to die if we had not been there to offer money and transport to take them to the nearest health facility. One child who had serious diarrhoea lived a stone throw from the health centre in Senya Bereku in the Central region could not be taken to the health centre because the mother could not afford the charges. In another case in a village not far from Bekwai in the Ashanti region, a child who had convulsion could not be taken to Bekwai Hospital because the parents did not have money to do so.

Due to poverty self-medication has become very rampant among poor people. The sad part of the practice is that in the rural areas recommendations are made to them by semi-illiterate drug store keepers who may have limited knowledge about disease treatment. If the wrong drug is sold to the sick person then the disease may accentuate and can cause death.

Given the contribution of medicines to reducing disease, access is key to achieving better health. Affordability is one of the important dimensions of access to medicine. Over half of population of Africa does not have access to essential medicines. Some people do not respond to treatment because the medicines they take may be substandard. Unscrupulous pharmaceutical firms manufacture substandard medicines and sell them in poor countries. For example, a study in six African nations in 2007 revealed that 35 percent of seven malaria medicines sold by private pharmacies were substandard. A study in Kenya in 2008, found that 16 percent of the 113 brands from 20 countries were substandard.

### Alcoholism

Some people refer to St. Paul's letter to Timothy, "A little bit of spirit is good for thy stomach" as a license to drink their hearts out without any reference to "little bit". For 2004, the latest year for which comparable data are available on a global level, 38 percent of all global deaths (around 1 in 25) were attributable to alcohol. Writing in the *Lancet*, a team from the University of Toronto added that the level of disease linked to drinking affects poorest people the most. The report warns that the effect of alcohol disease is similar to that of smoking. The analysis found that 5 percent of years lived with disability are attributable to alcohol consumption. Although there have been some benefits of moderate drinking in relation to cardiovascular disease, these are far outweighed by the detrimental effects of alcohol disease and injury. In addition to disease directly caused by drinking, such as liver disorders, a wide range of other conditions such as mouth and throat cancer, colorectal cancer, breast cancer, depression and stroke are linked to drinking.

### Sanitation

Many disease parasites breed in unsanitary conditions. Rapid urbanization has led to scarcity of resources and growing slums with poor sanitation. Most of the people who live in these slums cannot afford decent housing because they are poor. Diseases abound in the slums due to the unsanitary conditions and the behaviour of the people.

### Divorce and Widowhood

Divorce has a lingering detrimental impact on health that even remarriage cannot fully repair. We start adulthood with a "health stock" that is kept or eroded depending on our marital experience. A study led by Linda Waite at the University of Chicago involving 8,652 people aged 15 to 61 found divorced people have 20 percent more chronic diseases such as cancer than those who never marry. The figure only drops to 12 percent for those who remarry (*Journal of Health and Social Behaviour*). Divorce or widowhood undermines health because incomes drop and stress develops over issues such as shared responsibilities. Marriage tends to bring an immediate health benefit, in that it improves health behaviour for men and may enhance financial well-being for women. However, remarriage does not heal all because certain conditions, such as diabetes and heart disease develop slowly over a substantial period and show the impact of past experiences, which is why health is undermined by divorce or widowhood, even when a person remarries.

### Conclusion

The fact that large numbers of people continue to live in intransigent poverty and hunger in an increasingly wealthy global economy, is the major ethical,

economic, and public health challenge of our time<sup>6</sup>. Security can no longer be defined in military terms. Instead, the task is to protect people from every type of threat – including poverty, disease and natural disaster. Development policy which is effectively implemented is the most cost-effective security policy, since it helps to prevent crises and conflict.

Policy must empower the poor to fully harness her/his potential to increase labour productivity and income and be able to provide the necessities of life for her/his household. Risk sharing schemes like health insurance tend to avoid catastrophic health situations for poor households who, otherwise would not be able to afford healthcare. In situations where individuals or communities are disadvantaged or vulnerable, there must be social protection and safety net programs, for example, subsidy on healthcare and education, school feeding programs to provide good nutrition for children and improve school attendance, school for food for households, and food for work programs for adults.

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