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# Poverty and blindness in Africa

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Africa carries a disproportionate responsibility in terms of blindness and visual impairment. With approximately 10 per cent of the world's population, Africa has 19 per cent of the world's blindness. It is no surprise that this reality also mirrors the situation in terms of the burden of world poverty.

There is an increasing recognition of the need to highlight the link between poverty, development and health care. Blindness, disabling visual impairment and the overall lack of eye-care services are too often the result of social, economic and developmental challenges of the developing world.

The state of eye care in Africa stands in alarming contrast to that in the rest of the world. Poor practitioner-to-patient ratios, absence of eye-care personnel, inadequate facilities, poor state funding and a lack of educational programs are the hallmarks of eye care in Africa, with preventable and treatable conditions being the leading cause of blindness. Eye diseases causing preventable blindness are often the result of a combination of factors such as poverty, lack of education and inadequate health-care services.

The challenge that Vision 2020 has set itself in Africa is enormous. Africa is not a homogenous entity, the inter- and intra-country differences in economic development, prevalence of disease, delivery infrastructure and human resources amplify the challenges of meeting eye-care needs. The successful implementation of Vision 2020 programs will be hindered without the development of a comprehensive, co-ordinated strategy that is cognisant of the differences that exist and the need for comprehensive solutions that are rooted in the economic and political realities of the continent as well as the individual countries and regions within countries. This strategy should recognise the need for economic growth that results in greater state funded eye-care services that focus on health promotion to ensure the prevention of eye disease, the development of eye clinics in hospitals and health clinics, and the training of the appropriate human resources.

Key words: blindness, comprehensive solutions, economic development, poverty, public health

The dire poverty confronting many developing countries has drastic implications for blindness, visual impairment and eye-care services in general and dictates the need to define global priorities and adapt interventions to suit the neediest countries of the world. The demand for broader strategies that seek sustainable integrated solutions that transcend the boundaries of eye care to encompass social, political and economic solutions, is thus elevated. Nowhere is this reality more evident than on the African continent. Africa carries a disproportionate responsibility with respect to blindness and visual

impairment. Despite containing 10 per cent of the world's population, Africa accounts for 19 per cent of the world's blindness.[1] It comes as no surprise that this reality is also mirrored in the gross domestic product (GDP) of African countries and the burden of world poverty. The Chairman of the African Union, John Agyekum Kufuor, in calling for the Pan African Parliament to assume its responsibility to advance the continent's socio-economic development, stated that 'Thirty-five of the 50 poorest countries in the world are found in Africa' and further outlined that 'post-colonial Africa has been plagued by poverty, hunger, illiteracy, diseases and conflicts'.[2]

## POVERTY IN AFRICA

The United Nations Development Program (UNDP) monitors the development status of countries by using the Human Development Index (HDI).[3] This index measures the average achievements in a country based on three basic dimensions of human development:

1. a long and healthy life
2. knowledge
3. a decent standard of living.

Africa and in particular Sub-Saharan Africa, (countries south of the Sahara Desert) often performs at the bottom of this list. The UNDP annual report highlights some key indicators of poverty. The situation in Africa consistently stands in stark contrast to the rest of the world. While most of the world has experienced a decrease in the number of people living below $1 per day, the number of people living on less than $1 per day increased in Sub-Saharan Africa by 100 million in 2001, when compared to 1990.[4]

The situation is alarming when some of the indicators for poverty are examined. According to the UNDP,[4] the following characterise poverty in Sub-Saharan Africa.

1. Sub-Saharan Africa's share of $1 per day poverty will rise from 24 per cent today to 41 per cent in 2015 if the current pattern of growth and distribution continues.
2. Sub-Saharan Africa needs an annual growth rate of income per capita of five per cent for 10 years to achieve the Millennium Development Goals (MDG) target of halving poverty. The actual growth rate since 2000 has been 1.6 per cent.
3. In a low-income country, basic health-care costs an estimated $30 to $40 per capita; across much of Africa spending is less than $6 per capita.
4. To significantly address poverty, additional aid at $10 billion per year for 10 years is required.
5. Africa accounts for 20 per cent of births but 44 per cent of child deaths. In 1980, child deaths in Sub-Saharan Africa were 13 times higher than in rich countries. They are now 29 times higher. On current trends it will take Sub-Saharan Africa until 2115 to achieve the MDG target on child mortality, putting it off track by a century.

Furthermore, according to the World Bank Global Monitoring Report 2006 on current trends, most of the countries of Sub-Saharan Africa will not meet any of the Millennium Development Goals by 2015.[5]

## POVERTY AND HEALTH

There is an increasing recognition of the need to highlight the link between poverty, development and health care. While there is still not enough being done, some initiatives have sought to create a significant shift in this direction. Under their initiative on Global Health and Foreign Policy, the Ministers of Foreign Affairs of Brazil, France, Indonesia, Norway, Senegal, South Africa and Thailand issued a statement[6] in Oslo in March 2007. It stated:

'In today's era of globalisation and interdependence, there is an urgent need to broaden the scope of foreign policy. Together, we face a number of pressing challenges that require concerted responses and collaborative efforts. We must encourage new ideas, seek and develop new partnerships and mechanisms, and create new paradigms of co-operation. We believe that health is one of the most important, yet still broadly neglected, long-term foreign policy issues of our time. Life and health are our most precious assets. There is a growing awareness that investment in health is fundamental to economic growth and development.'

According to Sachs,[7] health is a priority goal in its own right, as well as a central input into economic development and poverty reduction. The importance of investing in health has been greatly underestimated, not only by analysts but also by governments of developing countries and the international donor community. Increased investments in health will translate into hundreds of billions of dollars per year of increased income in low-income countries, as poor health leads to a loss in productivity, loss of scarce human resources through death and disability and an increasing diversion of resources from education and other economic development programs. There are potentially large social benefits in ensuring high levels of health coverage of the poor, including a spill-over to wealthier members of society. The links between economic development of a nation and the health of its people have been clearly stated,[8] however, the reality is that health funding in developing countries is constrained by competing demands and poor policies. The incapacity of health officials to implement effective policies has severely hampered access to health care, highlighting the need for:

1. cost-effective, sustainable health-care systems
2. well trained human resources
3. investment in research and development of all aspects of the health-care system to duplicate best practices.

Current major public health initiatives have indicated that enormous financial input alone will not solve the chronic inadequacies of the health-care crises in Africa. Comprehensive solutions that address the economic, social and political imperatives of the continent need to be implemented. A pilot implementation of the Global Alliance for Vaccines and Immunisation (GAVI) in four African countries found an ineffective roll-out,

due to major inadequacies in the health system infrastructure, both in resources and human capabilities.[9] This will come as no surprise to those who work in Africa. Given the advent of more combined initiatives such as the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM) as well as Vision 2020,[a] the pressure on African health systems to deliver will only increase.

This demonstrates the need for:

- currently available and potentially relevant knowledge to be translated into programs, policies, practices and appropriate technologies
- the development of models through researched, monitored, analysed pilot projects that build incrementally to the strengthening of existing health delivery systems.[9]

The lack of research is a serious impediment to the development of appropriate solutions. Besides the development of new ideas and models, the lack of evaluation of existing approaches has resulted in the perpetuation of failed policies. 'Research is essential for guiding action. While research cannot substitute for action, action without tools and intelligence can be ineffective and wasteful of resources. Appropriate research can inform and accelerate the efficiency and effectiveness of action for health.'[10]

While existing resources may not favour much increase in funding for health research, especially in the developing world, a more focused strategy with greater collaboration between government and educational institutions as well as global collaborations can refocus limited resources. 'Every year more than US$70 million is spent on health research and development by the public and private sectors. An estimated 10 per cent of this is used for research into 90 per cent of the world's health problems'.[11]

[a] Vision 2020—The Right to Sight is a global campaign launched by the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) in collaboration with non- governmental organisations and private organisations, to eliminate preventable blindness by 2020. These organisations have jointly prepared and launched a common agenda for global action.

## POVERTY AND EYE CARE

If development is defined as a process of enhancing human capabilities, that is, to expand choices and opportunities so that each person can lead a life of respect and value, then poverty is the deprivation of these capabilities.[12] Blindness and eye diseases do not occur in a social vacuum, however, the often narrow, exclusively clinical approach to eye diseases tends to create this social vacuum. The reality is that blindness, disabling visual impairment and the overall lack of eye-care services are often the result of social, economic and developmental challenges of the developing world. Eye diseases that cause preventable blindness are often the result of a combination of factors such as poverty, lack of education, inadequate health-care services and the lack of opportunity for people to control or influence their health care. Loss of sight represents a public health, social and economic problem, especially for developing countries, where nine out of 10 of the world's blind people live.[13]

According to Resnikoff and Pararajasegaram[14] the current global backlog of needless blindness and its projected doubling by 2020 are a challenge to the whole of society. The prevention of eye disease is also a major challenge. Individuals who, by virtue of their knowledge and skills, can make a major contribution to meet this challenge have not only a professional but also a moral responsibility in this respect. Poverty looms large in countries with the greatest burden of avoidable blindness and this is compounded by the inequity in the quantity and quality of eye-care services available in these countries.[14]

Ho and Schwab,[15] in comparing the socio-economic status of countries with blindness prevention data, found an inverse relationship between the prevalence of blindness and economic development. A critical stage of economic development may exist whereby the prevalence of preventable blindness becomes significantly less, a per capita income of approximately $2,000. Potentially, the economic development of nations and/or regions with a per capita income of less than $2,000 could dramatically reduce the impact of preventable blindness.[15] The link between per capita income and blindness was evident in the results of The Andhra Pradesh Eye Disease Study from India, which reported that the possibility of blindness (visual acuity of less than 6/60 or central visual field of less than 20 degrees in the better eye) increased with decreasing monthly per capita income. Those in the extreme lower (monthly per capita income of US$4.5 or less) and lower (monthly per capita income of US$11.3 or less) socio-economic strata had 10 and five times higher risk of having blindness, respectively, compared with those in the upper socio-economic status (monthly per capita income greater then US$45.5).[16] According to Frick, Hanson and Jacobson,[17] there is considerable evidence in the literature to suggest the existence of important inequalities in the burden of trachoma. Trachoma disproportionately affects poor countries, with 12 of the 16 World Health Organization-designated priority countries being low-income countries. Within low- and middle-income countries, the geographic distribution of trachoma frequently reflects a higher burden in relatively rural and poor regions. Trachoma seems to cluster around disadvantaged communities and around relatively poor households within communities.[17]

## EYE CARE IN AFRICA

The state of eye care in Africa stands in alarming contrast to the rest of the world. Poor practitioner-to-patient ratios, total absence of eye-care personnel, inadequate facilities, poor state funding and a lack of educational programs are the hallmarks of eye care in Africa, with preventable and treatable ocular conditions being the leading causes of blindness. Africa is one of the worst affected regions of the world, accounting for almost seven million of the world's blind population.[18] The eye-care crisis is exacerbated by the high prevalence of HIV-AIDS,[19] which places disproportionate pressure on the health-care system by utilising a high percentage of the limited resources.

The extreme paucity of eye-care personnel and infrastructure to train personnel, amplifies the vision care crisis. With an average of one ophthalmologist per one million of the population in the Sub-Saharan African region, the likelihood of adequately addressing this problem in the immediate future is bleak.[18] The number of optometrists being produced in Africa is also insufficient to effectively meet eye-care needs. Only seven of the 53 African countries conduct optometric training programs. To compound the problem of insufficient eye-care personnel, most practising ophthalmologists and optometrists are either in private practice or in urban areas. These practitioners serve only a fraction of the population, with the majority still dependent on the public sector due to their poor income or lack of medical insurance. In South Africa, only 20 per cent of the population is served by the private sector.[19–21] Approximately 2,500 optometrists provide eye care to a population of 44 million people in South Africa (that is, approximately one optometrist per 17,600 of the population).[19–21] Comparatively, in the United Kingdom, the ratio is approximately 1 : 5200.[22] When one considers the fact that approximately 2,400 optometrists are serving 20 per cent of the population, then the ratio is 1 : 3,700 for the private sector and 1 : 352,000 for the public sector. The aggregate population to practitioner ratios mask the intra-country differences that occur and the distinction between the poor who rely on government services and those who can afford private services. In many instances, eye-care service delivery relies heavily on the presence and participation of ophthalmic nurses, ophthalmic clinical officers and other health-care personnel.

## VISION 2020 PRIORITIES

### Trachoma

Trachoma is one of the world's leading causes of preventable blindness and affects mainly developing countries.[23] Communities with a poor socio-economic status, limited clean water supply and poor environmental conditions are usually those affected by trachoma. Trachoma affects approximately 150 million people living in the world's poorest rural communities and causes an estimated loss of $2.9 billion in productivity annually.[24]

According to Frick, Hanson and Jacobson,[17] the countries in Sub-Saharan Africa with blindness from trachoma have a relatively low level of economic productivity in comparison with the Middle-Eastern Crescent or other Asia/Island countries that do not have blindness from trachoma. The countries in Sub-Saharan Africa without blindness from trachoma are also very poor. Thus, while it is clear that the countries with trachomatous blindness are very poor, on average, support for the notion that the poorest of the poor countries is where the burden is greatest will only come from data that is at a more detailed level.[17] Using an alternative measure of economic productivity, the gross domestic product per capita yielded a similar situation.[17]

A recognition of the link between the socio-economic determinants of eye disease and the prevalence has been accentuated in the strategies that have been adopted to address blindness due to trachoma. The WHO articulated strategy of SAFE (surgery, antibiotics, face washing, environmental interventions)[23,25,26] is now widely accepted and implemented in Africa. This strategy demands the addressing of aspects of poverty as communities of low socio-economic status are most affected by the lack of water, lack of latrines and unhygienic environmental conditions. It has also challenged the approach that non-governmental organisations (NGOs) currently utilise in terms of partnerships. It promoted a more developmental solution, which means that strategic partnerships with non-eye-care organisations and governments are essential, especially those civil society organisations promoting the development of basic services for rural and impoverished communities.

### Refractive error

Refractive conditions have been neglected as part of blindness prevention and eye-care programs. The lack of services mirrors the socio-economic conditions and is reflected in the access to refractive error assessment and the provision of spectacles. Various population-based studies[27–35] have shown that unlike other ocular conditions such as trachoma, a high prevalence of refractive error does not necessarily occur with a low socio-economic status of communities. This can be attributed to the multi-factorial causes of refractive error. The study among school children[34] in Durban, South Africa, revealed an overall prevalence of 4.0 per cent myopia and 2.6 per cent hyperopia, however, only 19 per cent of the children requiring spectacles were wearing them or had had an eye examination. The study revealed that unlike other situations where continued wear or compliance was an issue, the non-wearing of spectacles was related to the fact that the children had not had access to vision screening, eye examinations or spectacles. The lack of services in the public sector, as well as the prohibitive cost of spectacles in the private sector, were key contributing factors.

These results reflect the situation in South Africa, which is one of the better resourced countries in Africa in terms of eye-care practitioners. Refractive error programs are limited in other countries in Africa and the number of optometrists providing refractive services differs markedly from that in the developing world. In schools for the blind in Africa, studies have found that almost 50 per cent of the students in these schools need not be there but merely lack a pair of spectacles (Minto and Dube, 2006, unpublished data). This confines individuals, who could be economically active after gaining an education, to a life that lacks opportunities. The poverty and deprivation of many communities and countries prevents the provision of refractive correction and the lack of correction confines many to limited opportunities. It is a vicious cycle that contributes to keeping children in poverty. Adults over the age of 40 years are usually dependent on presbyopic (reading) corrections to function at work and at home, and to worship. The lack of affordable services and the absence of the appropriate

financial resources to purchase spectacles have the potential to confine many to poverty and drive others into poverty by restricting them from economic activity that demands good near vision.

## ONCHOCERCIASIS

While poverty can contribute to an increase in blindness, the converse whereby sustainable communities with a well-developed agricultural base can be driven into poverty can also occur. For example, fear of blindness from onchocerciasis has led to the depopulation of fertile river valleys of the West African savannah, greatly diminishing agricultural production and increasing poverty and famine, while the disfigurement due to the disease can hinder social integration.[36]

Onchocerciasis is one of the key diseases targeted by Vision 2020. It is the world's second leading infectious cause of blindness, responsible for at least one million blind or severely visually disabled people.[37] The impact of onchocerciasis goes beyond just blindness, with the disease having significant socio-economic implications. The socio-economic importance of onchocerciasis was the main reason for the creation of the Onchocerciasis Control Programme in West Africa (OCP) in 1975.[36] Studies have shown that there may be substantial benefits (in terms of enhanced productivity, increased household-level welfare and reduced health-related expenditure, for instance) resulting from the reduction of the skin-related symptoms associated with the disease.[38]

### Cataract

Cataract continues to be a major public health challenge for blindness prevention efforts in Africa. Javitt, Wang and West[39] stated that cataract contributes to 50 per cent of world blindness and is more prevalent in developing countries, where it may occur at an earlier age than in developed countries. In Africa, the numbers of cataract blind are increasing, and will probably increase more rapidly in future due to the population growth and the ageing of the population.[40] In addressing the impact of poverty on cataract blindness, Yorston[40] stated: 'In Africa, people who gradually become blind from bilateral cataract are usually destitute. What little savings they had will have been spent on food and other essentials. There will be no money to spare for surgery whose outcome is uncertain, and possibly unsatisfactory. At the same time, the macroeconomic policies pursued by many African countries, under the direction of the World Bank and the International Monetary Fund, dictate that patients must bear an increasing proportion of the costs of medical care. Many cataract blind patients are simply unable to afford surgery.' Furthermore with the HIV crises in Africa many elderly people who do receive state pensions are finding themselves in the invidious position of being the head of households due to the untimely death of their children. This places even greater pressure on limited resources, making access to cost recovery programs (no matter how affordable) inaccessible to many.

### Childhood blindness

If not treated early, childhood ocular conditions can lead to permanent visual loss. Furthermore, while the prevalence rates may not be as high as for some of the adult blindness conditions, the number of years one lives with the disability makes childhood blindness a priority issue. This highlights the importance of appropriate and timely intervention in conditions causing childhood blindness and visual impairment, particularly those that are treatable. The reality is that in much of the developing world, poor public health resources result in many childhood ocular conditions being left untreated, resulting in amblyopia and blindness.

## ADDRESSING POVERTY AND BLINDNESS

In making a case for the economic impact of blindness, Dandona and Dandona[41] state:

'Genetic factors aside, diseases like xerophthalmia, other nutritional causes of blindness and nutritional influences on cataract can be eradicated with improvement in socio-economic development. Similarly, trachoma, a blinding disease associated with poverty and inadequate sanitation, can also be controlled with economic improvements. However, it is less convincing that pure economic development will have a significant effect on the rates of onchocerciasis, unless fly eradication or control programs are considered to be a part of economic development. Similarly, glaucoma is a worldwide problem in all populations that requires more complex intervention strategies and will probably not change dramatically with economic development. In fact, with economic development leading to increased longevity, the prevalence of glaucoma in the developing countries may actually increase in relative and absolute terms.'

Therefore, it is important that any strategy utilised to address poverty and blindness needs to be broad and integrated beyond eye-care organisations and partners. Furthermore, the diversity within and between countries needs to be taken into account. The comprehensive solutions adopted by governments and NGOs in addressing blindness due to trachoma and the success thereof are indicators of the value of recognising the impact of poverty on blindness. An example is that only after the rapid expansion of water services, post-apartheid, was South Africa defined as a trachoma-free country.

The challenge Vision 2020 has set itself in Africa is enormous. Africa is not one homogenous entity. The inter- and intra-country differences in economic development, prevalence of disease, delivery infrastructure and human resources amplify the challenges of meeting eye-care needs. The successful implementation of Vision 2020 programs will be hindered without the development of a comprehensive, coordinated strategy that is cognisant of the differences that exist and the need for comprehensive solutions that are rooted in the economic and political realities of the continent, as well as the individual countries and regions within countries.

## POVERTY AND GOVERNANCE

Most eye-care organisations work at the level of local communities and are a tiny

component of the overall challenge of addressing poverty via eye care in particular. No matter how significant, current efforts will not adequately reach the majority of Africa's poor. Without a dramatic expansion of current services, none of the targets of Vision 2020 will be met. Seeking the expansion of eye-care services demands a paradigm shift for many governments and NGOs. First, it demands an acceptance that eye-care services in Africa need to and must be provided primarily by governments, if the adequate access is to be achieved. NGO efforts should be aimed at developing best practices and advocating for the adoption of these efforts by governments. The role of public health systems in redressing health inequities is evident as public health systems have a mandate to protect and promote the health of the entire population. The private sector needs to be expanded to ensure that not all the burden of providing eye-care services falls on governments. It is imperative that those who can afford the services are able to access them outside the public sector. This sector often includes civil servants, who in many instances are a significant section of the working population. To expand the impact of current efforts, eye-care NGOs need to influence governments and other organisations, such as the World Bank, to make a significant impact on health care and ultimately on eye care. In this respect financial inputs alone will be inadequate and advocating for more effective governance is important to ensure the transparent, equitable and people-focused approach to the deployment of resources. This raises the question of how, in addition to directly addressing eye-care needs through community-based programs, can eye-care NGOs engage with governments and donors to expand the impact of current programs. Currently, best efforts to meet eye-care needs have fallen short of targets, and resources cannot match needs. It is not feasible for eye-care NGOs to expand their scope of work to include that of other organs of civil society. A realistic appraisal of the situation indicates that partnering and contributing to the activity of other civil society formations involved in the discourse around good governance, poverty alleviation and health-care policies is of strategic importance and imperative, if a significant and lasting impact on blindness prevention is to be made. Such coalitions do exist, for example World Alliance for Citizen Participation (CIVICUS), World Social Forum and others but eye-care NGOs are conspicuous by their absence.

## CONCLUSION

Poverty can be considered as multidimensional in terms of a lack of material well-being (for example, land, housing, food), absence of infrastructure (for example, limited access to roads, clean water, health services) and a lack of power (for example, decision-making capabilities, access to information).[42] The economic and political realities of Africa indicate that, unless a comprehensive strategy that promotes good governance, economic prosperity and the appropriate allocation of resources to health care programs is implemented, limited gains will be made in blindness prevention. Success in these aspects will enhance efforts at health promotion and education to prevent eye diseases, the development of the appropriate human resources and the expansion of government-funded eye-care services.

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