
**PUBLIC HEALTH PREPAREDNESS: LESSONS FROM THE AFRICAN
CONTINENT WITHIN THE SUB-SAHARA**

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ABSTRACT

Distant rural regions of the sub-Sahara Africa are often coveted by foreign investing companies for their natural resources .However; the rural populations do not always take advantage of economic benefits resulting from those investing activities. These increasing activities do not leave without harm the health of rural communities as they rely on community-based traditional and ancestral practices such as fishing and hunting, traditional medicine, spiritual ceremonies among others to survive. We aimed to analyze selected indicators of public health in rural zones highly impacted by globalization factors using existing database and literature research. Given the complexity of the situation, efforts and strategies to mitigate the negative effect of globalization on the health of rural communities must include not only urgent and binding commitment of all stake holders but also a multi sectorial long-term approach to increase the health of rural Sub-Saharan African populations while taking advantages of local know-how.

Introduction

Over the last decades, substantial changes are observed in the life style of Sub-Saharan African populations; these changes are directly and indirectly linked to various practices diffused across borders and will only increase with growing globalization and growing population. The presence of multinational companies taking advantage of natural resources in rural areas and increased trades with western and developed countries does not always help achieve a better life for those populations; on the contrary several public health issues are worsen or provoked by these globalization factors. Given their specific historical and ancestral heritage, Sub-Saharan African countries have developed some specific life and public health practices which are not depicted in conventional consideration of globalization even though they are directly related and subsequent to it. Rural exodus, immigration rate, the use African traditional medicine, mobile money

transfer among others are unsuspected factors which can help measure and assess the effect of globalization especially in rural regions of Sub-Saharan Africa. With the preexisting burden of chronic and infectious diseases such as Malaria and Ebola, the public health issues are exacerbated with influences of the globalized world. Nevertheless, there are significant advantages of exchanging and trading with other developed countries as they can provide medical assistance and financial help to improve medical infrastructure. The dilemma for those populations remains to take advantage of exported habits while preserving the gains of ancestral heritage and the advantages of proven specific life tips developed locally.

What does globalization mean for Sub-Saharan Africa?

Given that the word “globalization” has been used with different meanings by different authors, the definition by Robert Gilpin [1] outlining signs of an increasing interdependence of national economies in trade, finance... seems to be the most considered in the literature [2]. Among several indicators of globalization described in the literature, major ones are usually related to economic aspects :Capital movements(capital flow), Foreign Direct Investments (FDIs), International Trade (Export volume /Gross trade, relative to production), Economic activity of multinational firms and Internalization of Technology [3]. A quick assessment of import volume between Sub-Saharan Africa and other regions of the world between 1998 and 2018 indicates an increasing role of China replacing Europe as the privileged economic partner. This change in partnership deeply affects and reshapes the social tissue, life conditions and life habits in Sub-Saharan Africa.

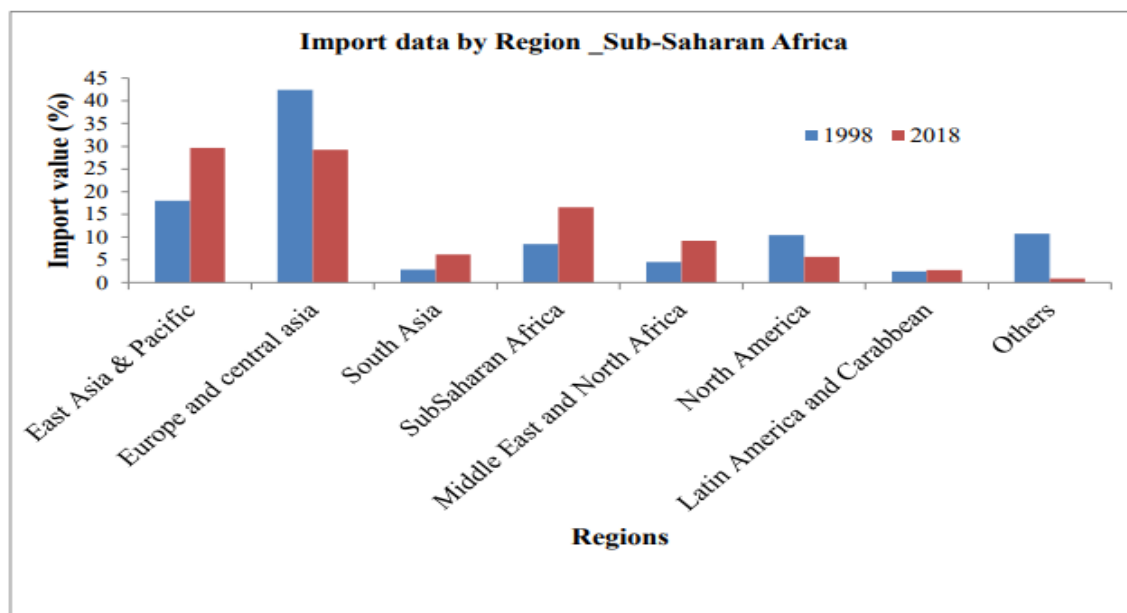


Figure 1. Import data between Sub-Saharan Africa and other regions of the world from 1998 to 2018.

With a fast growing population (as exemplified by Nigeria), Sub-Saharan Africa is an attractive region where international economic forces confront and compete with each other (Figure 1). Those factors however cannot represent specificities and unsuspected particularities of sub-Saharan African regions, given their geopolitical position and historical heritage. Our findings demonstrate that some factors specific to those regions directly affect all aspects of globalization and are considered by local populations as its direct indicator.

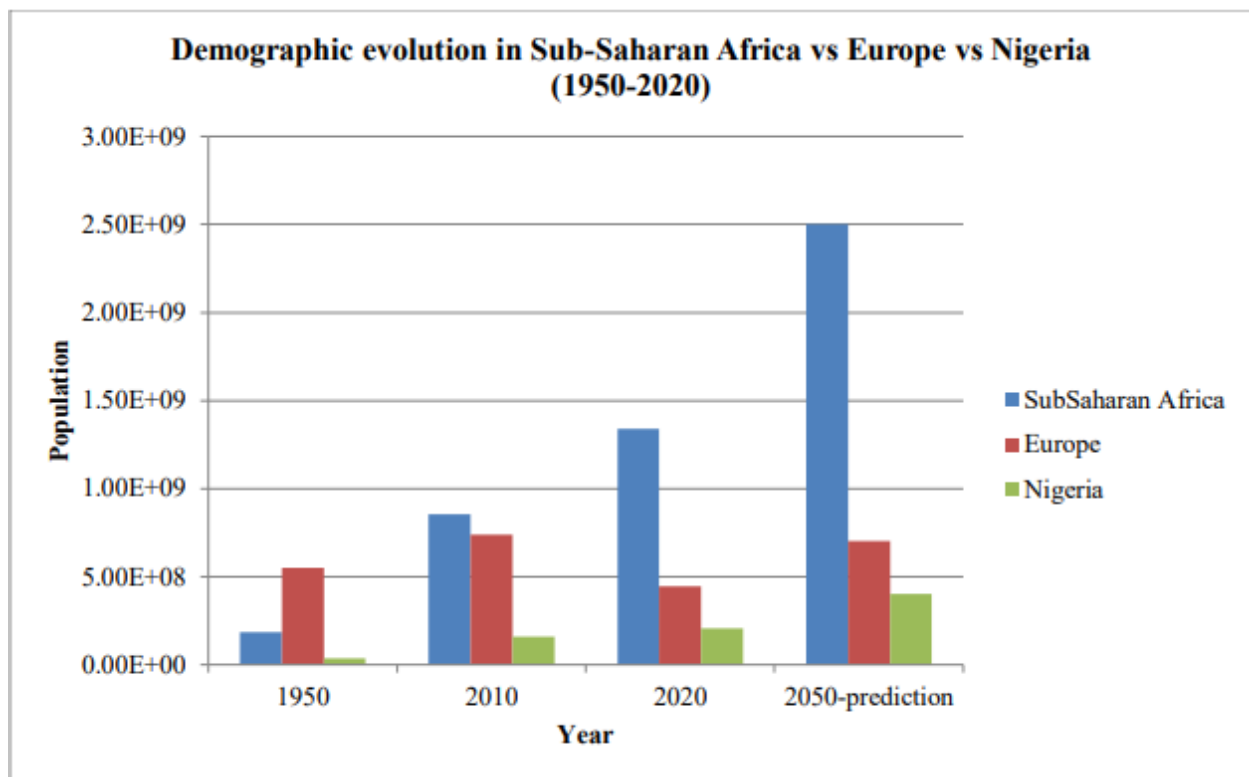


Figure1. Demographic evolution in Sub-Saharan Africa compared to Europe and Nigeria. Raw Data extracted from the World Bank.

Those specificities are: Rural exodus, Immigration, the Role of the Diaspora, Self-medication linked to Traditional medicine and the Exploitation of natural resources emphasized by political instability.

Public Health considerations in Sub-Saharan Africa

The global situation of Public Health global in Sub-Saharan Africa is mainly shaped by the growing burden of mortality and morbidity caused by Non-Communicable diseases (NCDs) and infectious diseases. The significance and the weight of chronic diseases on health system increases as the pattern of disease vary with time [4].

The majority of studies [5] collecting health data on of hypertension, obesity, diabetes, cancer and respiratory diseases in Sub-Saharan Africa have established correlations between health and changes in lifestyle (Table 1). A report by the World Bank demonstrated that high fasting plasma glucose and high body mass index were responsible of significant health loss, especially among upper-middle income countries of the Sub-Saharan region such as South Africa or Gabon. The report observed that childhood underweight was the primary risk factor driving large health problems in the Central African Republic and other lower-income countries [6]. The catastrophic situation of Non-chronic diseases in Sub-Saharan Africa is caused by several factors such as changes in lifestyle inherited at least partially from globalization. Unplanned or unsustainable urbanization, alcohol use, high blood pressure, and smoking are also among increasing risk factors for non-chronic disease. Moreover, some major infectious diseases such as tuberculosis and HIV have been shown to be risk factors not only for early life malnutrition but also for diabetes and cardiovascular diseases [7]. In addition to known environmental factors, the novel factors influencing the occurrence of chronic diseases in Sub-Saharan Africa are disease burden of specific rural populations, diversity (geographic and social) and genetic heterogeneity ;these aspects are also included into the STEPwise Approach to Non-Chronic Disease (NCD) Risk Factor Surveillance (STEPS) promoted by the World Health Organization(WHO) [8] [9] [10]. Some diseases so-called “neglected African diseases” such as leishmaniasis, lymphatic filariasis, sleeping sickness have been reported to cause loss of productivity and various disabilities especially in rural regions of sub-Saharan countries [11]. These diseases including others such as dengue, Ruruli, Chagas disease have been reported to cause serious health conditions such as mental retardation, impaired childhood growth, blindness and amputation among others.

Conventional indicators of public health used in the literature are communicable disease, prevention and health promotion, maternal child health, access to care and Environmental public health. However, when questioned, local Sub-Saharan populations consider Malaria and HIV among others are their main health concerns (see figure 2).

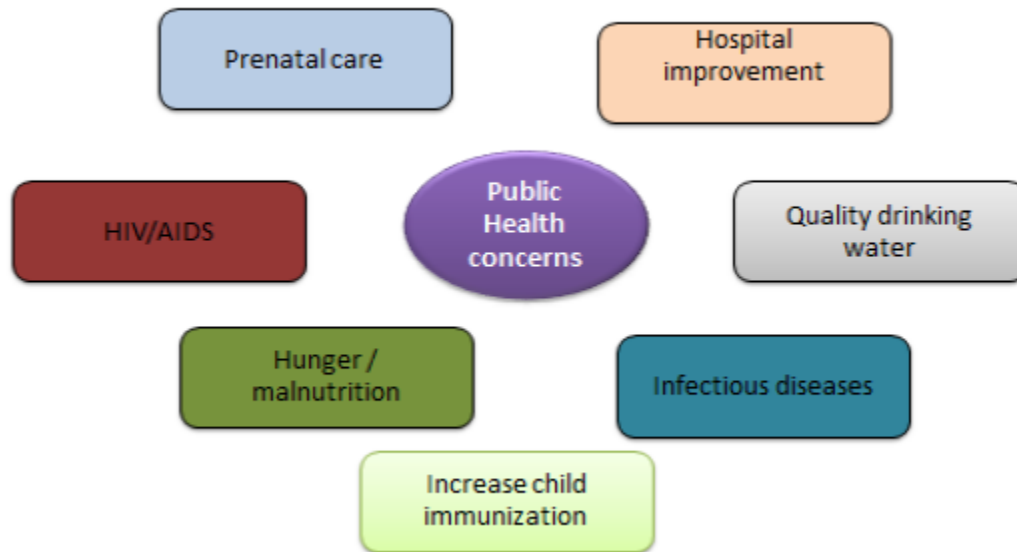


Figure 2. Public health concerns as seen by local populations. Results extracted from The Kaiser/Pew Global Health Survey (2013, 2017)

According to the World Health Organization, Emerging and re-emerging Infectious diseases represent the major cause of mortality in Africa [12]. Despite multiple vaccination campaigns against various childhood diseases and polio, high occurrence of infectious diseases including acute respiratory infections and diarrheal disease are still contributing to the increase mortality rates in Sub-Saharan Africa [11] [13]. Because they affect all life sectors and are increased with increased cross-region movement of populations, infectious diseases might reverse the gains made in economic and development sectors such as the human development shown to improve in the last decades. Infectious diseases such as Malaria are no longer just a health problem as it is considered to cause poverty and to be caused by it. A report by the International Labor Office indicated that HIV/AIDS considerably reshape the work force of Sub-Saharan regions by reducing the rate of growth of the labor force, reducing average school enrolment and altering the age distribution of local labor force. The report also concluded that HIV/AIDS reduces the average of age of workers (thereby compromising the required average years of experience), modifies sex distribution of labor force especially in highly affected countries such as South Africa [14].

In Liberia, Ebola Virus disease has been shown to disrupt groups of labor, reducing worker mobilization for agricultural activities and decreasing product yields as less area and fewer workers are involved in the production [15].

Unsuspected Effects of globalization factors on public Health

Given their specific socio-political situations, Sub-Saharan regions rely on some unusual social practices to impact health quality. For example, the contribution of sub-Saharan Africans abroad in the improvement of new medical infrastructures and improvement of existing ones is becoming of a paramount importance especially in countries with low-income level [16] . Those populations leaving mainly in western countries (Europe and North America) also support their siblings with financial help, replacing social insurances and other basic services abandoned by the authorities [17]. Therefore, urban families with siblings abroad are more likely to afford better medical care as “having a sibling abroad “is used as a guarantee for payments presented to medical personnel. Richer families send their sick siblings abroad (Europe and North America vs India and South Africa) for medical emergencies that cannot be handled in poorly equipped hospitals. The same phenomenon is observed at internal level where patients in rural areas (villages) are poorly taken care of and must be sent to urban cities for medical care.

Immigration and rural exodus are thus two factors of globalization that directly impact the health system and public health in Sub-Saharan countries. Countries with significant trades with South Africa are at higher risk of HIV/AIDS. At the one hand, increase presence of western medicine and education is a lifter factor for traditional African medical and pedagogical practices. On the other hand, the young generation in rural zone is attracted by better education and health care proposed in urban cities, leading to increased rural exodus. Trained and experienced local medical personnel are also tempted to leave for urban cities or western countries, worsening the ratio of medical personnel per habitant

Health expenditure of rural is significantly low as they rely in traditional medicine and sporadic free interventions organized by visiting medical personnel .These rapid intervention teams are usually constituted of volunteers, students and members of international NGOs [18].

Table 1. Health consequences linked to globalization-related influences

Influences from globalization	Consequences (health conditions)
Smoking , alcohol use	Height and weight, waist-circumference, BP, fasting/random blood glucose
Sexual behavior, breastfeeding, age at menarche	Birthweight, body composition, oral glucose tolerance test, HbA1c, genetics

Physical activity, diet	Hip-circumference, lipids profile, urinalysis, infections (HIV, tuberculosis), anemia
Exploitation of natural resources/mining activities	Black lung caused by inhalation of coal dust Legionella contamination or high concentrations of other heterotrophic microorganisms Malaria and dengue fever is substantial at some remote mining locations.

With increasing exchange with neighboring regions and neighboring countries, some ancestral health-related traditions are questioned and reviewed by both urban and rural populations (for example: scarification procedures, the “Hyena” sexual cleansing in Malawi [19], excision and others).

In Northern Ghana, scarification (also called cicatrization) is used by some groups such as the Dagomba in order to treat pneumonia, convulsions, stomach pains and measles [20]. During scarification, the skin is cut by a traditional healer and medical powder or healing potion is applied directly into the wound. With the aseptic paradigm brought by western medicine and “foreign “education, scarification is less and less attractive especially for younger generations even though no modern alternatives are easily available in rural zones; this growing mistrust is encouraged by several health problems caused by scarification[21][22].

The influence of western culture is not without arm: many health conditions found in sub-Saharan cities (especially urban areas) are directly or indirectly related to new habits from the West. It is however not clear if those habitudes (seen in Table 1) are exclusively and clearly imported to Sub- Saharan culture from other World regions.

Globalization and Colonization of Sub-Saharan Africa: Surprising effects on public health

The current situation of public health in African countries is intrinsically related to their historical and political heritage. Using the Kingdom of Kongo as an example, the following analysis demonstrates how colonization and exchange with foreigners have shaped the current situation in central Africa (DR Congo, Angola, Gabon and Congo). Kongo is considered in many ways as the first truly globalized kingdom of the Atlantic’s Africa. The kingdom was well organized and developed well before the arrival of Europeans.” “Their brocades, both high and low, were far more valuable than the Italian.” Said Professor De Graft-Johnson. The Kongo kingdom was well- known as very open to globalization; its ruling king, King Alphonso, Alfonso had a permanent bodyguard made up of mostly foreign soldiers and Portuguese advisors.

Medical care was in charge of “nganga-kisi”, freely translated as medical priest “as opposed to nganga-nzambe translatable as spiritual priests. With the arrival of European colonizers, the activity and know-how of those priests were demonized and almost completely vanished while cultural artifacts were stolen and stored in European museums. The Sarr Savoy report outlined that ““more than 90% of stolen African art is housed in major western art institutions such as the British Museum, the Metropolitan Museum of Art in New York, and the Art Institute of Chicago”. Although ancient populations of African kingdoms had enormous richness and medical know-how successfully managed and transmitted from generation to generation by the priests, the current poorness of medical ancestral practice demonstrates how nefarious was the influence of aggressive colonization on the health care and medical traditions in Sub-Saharan Africa. Medicinal plants prescribed by traditional healers are not only the easiest therapy but also the most accessible and affordable health resource to which Sub-Saharan African populations in rural areas has direct access. When compared, countries with heavy colonization heritage seems to have lost more of their traditional medical practices: 90% of the population in Ethiopia still use herbal as primary healthcare, while only a growing portion of western (Canada and Germany for example) have tried the so-called complementary or alternative medicine (CAM) at least once [23].

Conclusions and perspectives

Sub-Saharan Africa is a fast growing region with significant natural resources which attract foreign investors from all over the world. Most of the countries have to deal with serious public health issues such as chronic and infectious diseases. The management of these diseases is directly affected by rural exodus, immigration, poverty and other ongoing local issues. These issues and their consequences combined with changes observed during the last decades can help measure and assess the effect of globalization especially in rural regions of Sub-Saharan Africa. Given the dilemma for those populations to accommodate their ancestral and local practices with exported medical know-how, decision makers and foreign partners should privilege approaches which take advantage of local know-how while improving existing health care system with external contribution.

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