

Integrated strategies for control of devastating transmissible diseases in Cameroonian urban areas: The case of malaria, tuberculosis and waterborne diseases.

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Abstract

The recent, fast and poorly handled rural to urban migrations of people has led to unplanned settlement patterns, overcrowding and insufficient sanitation facilities, shortages of potable water, and general an unhealthy environment. The emerging cities have thus become areas where the most devastating scourges (malaria, tuberculosis and water borne diseases) continue undermine the socio-economic development of the urban areas. Herein, we discuss the current health challenges in major Cameroonian cities and argue that only a multidisciplinary approach including diagnosis and treatment, environmental care, and health education, is likely to address the health challenges in the emerging urban settings.

From a recent publication by Titanji (2014) on lessons learned from the recent Ebola crisis in West African countries, some key elements of an integrated strategy for addressing health challenges in major Cameroonian cities are discussed.

Key words: Malaria, Tuberculosis, waterborne diseases, Cameroon cities, integrated approach

Resume

Les migrations des populations des campagnes vers les zones urbaines, ont récemment pris une ampleur sans précédente au Cameroun. Rapides et mal gérées, ces mouvements des personnes ont entraîné une urbanisation mal planifiée, caractérisée par un surpeuplement presque imprévisible des villes, des installations d'assainissement insuffisantes, des pénuries d'eau potable et un environnement globalement insalubre. Les villes émergentes sont ainsi devenues des zones où les fléaux les plus dévastateurs (paludisme, tuberculose et maladies transmises par l'eau) continuent de compromettre le développement socio-économique des zones urbaines. Dans le présent article, nous discutons de certains de ces problèmes de santé d'actualité dans les grandes villes camerounaises, et nous soutenons que seule une approche multidisciplinaire incluant à la fois des systèmes efficaces de diagnostic et de traitement, l'assainissement et la préservation de l'environnement, voire la santé animale, sans oublier l'éducation à la santé, est susceptible de répondre aux défis de l'heure.

En nous inspirant d'une publication de Titanji (2014) sur les leçons tirées de la récente crise de l'Ebola en Afrique de l'Ouest, certains éléments clés d'une stratégie intégrée susceptible de relever les défis en matière de santé dans les villes camerounaises, sont amplement discutés.

Mots clés: paludisme, tuberculose, maladies transmises par l'eau, villes camerounaises, approche intégrée

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Background

The massive immigration of people from the rural to the urban areas has profoundly modified the socio-economic fabric of most African countries with attendant demands on the social services. For instance, about 55% of Cameroon's populations live in urban settings, with an overall urbanization rate of 3.23%. With only 10% of her populations living in cities and towns at the beginning, Africa ended the 20th century with 47% living in urban areas and an estimated 70% urbanization is expected by 2050. Meanwhile, the average life expectancy in Africa has climbed from 40 in 1950 to 50 years today (Mboup, 2013). Whereas rural areas in developing world are often characterized by poverty and the lack of appropriate health infrastructure, cities may offer both the best health and well-being facilities, and paradoxically the worst environment concentrating health risks and hazards. According to the WHO, major health risks emanate from unsustainable and unplanned development of urban housing, transport, and food systems, including climate risks, air pollution, housing-related health risks, nutrition insecurity and unhealthy diets, unsafe drinking water, poor sanitation and waste management (WHO, 2017). A cluster of sociocultural, economic and environmental factors converge with multiple players to influence health determinants in urban settings. Beside these global trends, national and local governments, the civil society, financial markets and the private sector all heavily influence the local health factors (WHO and UN Habitat, 2011).

Case study: The Buea Municipality

The Buea municipality is the headquarters of the South West Region of Cameroon. It was the capital of German Kamerun (1884-1918), the Capital of Southern Cameroons (1918-1961), the capital of the State of West Cameroon (1961-1972), the capital of South West Province (1972-1996) and the capital of the South West Region.

created in 1977. It is a medium-size university town of about 200,000 inhabitants, on the flank of Mt Cameroon (1000m above sea level). The 2004 survey by the Cameroon Ministry of Public Health revealed that about 40% of the population do not have access to quality health care while close to 60% have financial difficulties to afford basic healthcare services. The rapid increase in urban populations in recent decades, coupled with poor town planning has drastically changed the dynamics of transmission of major infectious diseases like malaria, tuberculosis and waterborne infections (dysentery, typhoid fever, cryptosporidiosis, cholera, etc.), which account for more than 50-60 % of the morbidity and mortality in Buea.

Together with inadequate energy and water supply, poor management of house-hold solid constitute major risk factors, which pose considerable obstacles to sustainable development. Environmental and health problems arise essentially from the inadequate household waste disposal, air and water pollution, water shortage, inadequate housing, deforestation, building on slopes and along flood plains and other areas vulnerable to pollution and disaster, overcrowding, poor town planning and inadequate health care facilities. Thus, there seems to be a paucity in strategic thinking and planning to facilitate a sustainable and organized urbanization process that would address the burning issues of unemployment, rising crime rates and the spread of endemic infectious diseases as well as emerging systemic maladies.

The health challenges are exacerbated by the frequent water crisis and a lack of efficient plan for the sustainability of the water catchments (springs and streams), predisposing the city to an avoidable water disaster in the nearest future if nothing is done to reverse the fast environmental degradation due to human activities and town expansion. This situation without being

necessarily unique to the Buea municipality, calls for a more efficient approach in disease control. A multidisciplinary approach including diagnosis and treatment, energy production, environmental care, and health education, is likely to strengthen ongoing control measures against these infections. We hypothesize that no single strategy taken alone can be effective in ensuring a good and sustainable healthcare coverage and sanitation in Cameroonian cities. However, the concerted impact of key critical factors and stakeholders can make a difference. The present paper aims to identify the main characteristics of current strategies, to propose elements of an integrated strategy for the optimal control of major devastating transmissible diseases like malaria, tuberculosis and waterborne infections in major Cameroonian cities.

- Current strategies

In Cameroon presently, major stakeholders involved in the management of cities affairs include the City Council, the Ministry of Territorial Administration and Decentralization, Ministry of Urban Affairs, the Ministry of Land and State Property, the Ministry of the Environment, Nature Protection and Sustainable Development, among others. Health issues are specifically handled by the Ministry of Public Health, while hygiene and sanitation is taken care of by the City Council. The State company "Hygiène et Salubrité du Cameroun" (Hysacam) is the main partner of city councils in handling hygiene and sanitation issues. They ensure collection, transport and treatment of solid waste from households. The waste is also recycled and valorized in the form of compost (in Sangmélina, Meyomessala, and Bafoussam), recovery and processing of plastic bottles, production of biogas (in Yaoundé-Nkoloulou, and Douala). However, the company is currently operating in only 16 cities located in the 10 regional headquarters (HYSACAM, 2017).

When compared to the rural areas, cities are better off in terms of number of health facilities and expertise. Confessional organizations as well as non-governmental organizations equally play significant roles both in healthcare and raising awareness on health-related issues in communities. However, despite the number of actors, actions are hardly coordinated leading to the duplication of effort and reduced efficiency of current waste management and disease control efforts in the cities and towns

- Proposed integrated strategies

As proposed by Titanji (2014) in his essay, *Lessons from the Ebola Crises*, a rational strategy and eventual elimination of devastating endemic disease should be based on the following cardinal principles:

- Application of the best scientific knowledge available;
- Sensitization and Health Education of the target population;
- Community empowerment and involvement;
- Mobilization and focused use of resources ;
- Strong and effective leadership in the campaign for health for all.

These cardinal principles are well known to public health practitioners, and are not in themselves new. It is their concerted use in a rational manner that was identified as being an innovation, which we now advocate in order to tackle the main health challenges that face our cities and by extension our country. Given the dynamics of "human" diseases, particularly those of zoonotic nature which are shared between humans and animals, it is equally crucial to consider integrating the "One Health" concept at all levels, from pre-service training to in-service health policy implementation.

In the rest of this paper we will articulate more clearly what these principles involve before alluding to malaria, tuberculosis and waterborne diseases which together constitute the main health challenges in our major cities today. But in doing so we recognize that these principles can be applied to other systemic diseases like hypertension, cancers and cardiovascular disease albeit with certain adaptations.

Role of a sustainable health system

Health delivery strategies operate within a health system and their effectiveness obviously depends on the system chosen. In most developed countries both preventive and curative medicine operate side by side either in a government subsidized framework (cf the National Health Service of the UK) or they operate as businesses with only limited government intervention (cf the US before Obamacare). The main approach in developed countries relies on allopathic or western medicine which is grounded in science and technology.

In Cameroon and many other African countries, allopathic /western medical practices exist side by side with traditional medicine which according to the WHO serves more than 70% of the population. Apart from politely recognizing that traditional medicine has value and creating a unit in the Ministry of Health, TM is not usually included in the official health plans. We have argued elsewhere that TM needs to be documented, its various practices and protocols subjected to scientific scrutiny and those that are effective and safe incorporated into the main stream health delivery system.

It should be recalled that western medicine is nothing other than post renaissance traditional medicine of western countries that has survived scientific scrutiny. China, for example, has developed traditional medicine, which it uses

concurrently with allopathic/western medicine. Nothing that stops Cameroon from doing the same. In fact we have the potential to do so. We salute Government efforts in establishing and sustaining the IMPM (Institut de Recherches Medicales et d'Etudes de Plantes Medicales) for close to 40 years, and authorizing the creation of a Department of traditional Medicine at the FMBS of the University of Yaounde 1. The challenge for Cameroon is to develop a health system that is commensurate to her means and which is affordable, accessible to all, efficient and effective.

The present western- curative medicine approach has its place, but is clearly inadequate, and needs to be expanded to emphasize prevention while progressively integrating those traditional practices that have been shown to be valid and safe.

Application of best scientific knowledge.

When we were preparing this report we found to our dismay that accurate statistics on health in general and on those diseases that we chose to mention is difficult to come by. The health statistics in the country are usually global i.e., for the whole country and only rarely broken down to the cities, towns and villages. We are aware that the Ministry of Health publishes health statistics based on sentinel reports from the hospitals and health centers. This is a good beginning. However, there is a world of difference between hospital and community based statistics. Therefore any health system design should include a framework for collection and dissemination health statistics.

For many of the diseases that prevail in our towns and cities, there is abundant scientific knowledge, on prevention and cure. The problem is with the implementation. The case of HIV/AIDS comes to mind. Although many researchers now hold that the disease originated from Africa (and this is not

certain) it is a historical fact that the disease first erupted in the US and then spread to Europe in the early 1980's. It came to Africa later and spread so rapidly that by the beginning of the 1990's Africa was the most HIV-infected continent and has since remained so. Then the best science available considered HIV/AIDS as a preventable, but incurable disease. Consequently, methods of prevention were developed and disseminated all over the world. The response to these messages is very instructive: in the developed countries the incidence of HIV infections dropped dramatically, mainly because of life style changes leading to safe-sex practices. In Africa (and in Cameroon) the disease continued to spread until at one point the general prevalence was 14%. The scientific messages of prevention, though widely publicized, had not been heeded to, or translated into lifesaving behavior.

Thus, it is not only necessary to generate pertinent scientific information; it equally important to develop a scientific culture wherein such information can be accepted and cause behavior change for the better. This brings us to the next cardinal principle: that of sensitization and health education.

Sensitization and Health Education.

Public health authorities have since recognized health education as a powerful tool for prevention of disease. That is why at home, at school, in the neighborhood, in the churches and mosques health education occurs to varying degrees. The main problem is that it is not focused and the quality of the messages can vary from one setting to another. The type of sensitization we advocate should be focused to the target diseases and for the relevant population.

Cameroon has some experience in this type of intervention. When HIV/AIDS became a high priority national health problem, HIV AIDS

control committees were formed all over the country. It is generally agreed that they did a wonderful job. These committees were provided with scientifically valid information by the Public Health authorities, information which on the long run has changed behavior patterns leading to a drop in the national prevalence of HIV AIDS to around 4%, which however is still relatively high if we compare ourselves to a developing country like Cuba where the national HIV/AIDS prevalence is less than 1% of the population.

Thus we advocate for a comprehensive community based sustainable health education strategy. It is well known that behavior change is difficult to achieve in a population as diverse as fluctuating as those of our cities. Therefore we cannot expect individuals to adopt health seeking behavior simply because this is the right thing to do. In some cases the Law has to accompany the health promoters in ensuring a healthy environment for all. In Cameroon there are laws regulating the advertisement of tobacco, against intentionally infecting others with a deadly disease like HIV/AIDS, but there are no Laws against urinating in the public, or promoting and selling excessively fatty foods that are known to be harmful to health, just to name these few.

The entire domain of traditional medicine is unregulated. There are no quality control mechanisms for the many traditional herbal remedies that are being manufactured and sold to the population. In our view, there is an urgent need to adopt and implement laws that promote health, and prevent diseases in our cities and country at large, provided always that they are scientifically sound and do not unduly infringe on individual liberties.

Community empowerment and involvement

Just as it is the right of every citizen to have access to food and shelters, all citizens deserve good

health as a right and they should be mobilized and oriented to achieving this. Traditionally health services are seen as a gift of the government to the citizens and consequently a top-to-bottom approach is adopted in planning and delivering health services. As pointed out for the Ebola crises, community involvement is crucial for the success of any health interventions. We have mentioned the HIV/AIDS committees; the distribution of the drug Mectizan for the control of river blindness as another community-based intervention that has succeeded in our country although it turned out to be unsustainable. The lessons learned from these and similar interventions is, that when communities are empowered and enabled, they can do a lot to improve on their situations. The challenging question is "what is Cameroon as country doing to empower city dwellers to take care of their health as a community?". We are by no means advocating the abandonment of individual responsibility for health. We instead call for a framework to enable each of our neighborhoods in the cities to take care of their environment in order to prevent disease and promote health.

Mobilization and focused use of resources

Following the principles enunciated above, scientific research will reveal the pressing health needs of our cities, which though similar may vary in some ways from one city to the other especially as we move from one ecological zone to another. Once this is determined a blue print can be developed to radically reduce, and why not eliminate the diseases in question. The mobilization of resources is crucial, and we have seen how this was done for Ebola and is being done to some extent for malaria and tuberculosis. The same situation is not valid for water borne diseases in our cities.

The sticky question is that many of the procedures and processes are capital intensive, and are thus not always affordable by countries

with weak economies like ours. Thus it is worthwhile maximizing the appropriate use of available resources while expanding preventive measures. Although HIV/AIDS has been radically reduced in the developed countries by a combination of health education and treatment of identified cases, the same approach is proving difficult for African counties because, they cannot afford to pay for the treatment and have to depend to a large extent on foreign donors. Furthermore, behavior change is slow and factors such as poverty, political instability have come to add insult on injury.

Resource mobilization should not only mean attracting foreign grants for our health system, but it should also mean mobilizing local human capital and finances for our health system. A publicly financed health care system has been proposed, but this only works well where the population are gainfully employed in order to generate revenue through their taxes.

There is a need to design a health delivery system that we can afford, and which is not so heavily dependent on foreign subsidies. In this regard we will not need to invent the wheel, for there are many best practices including some developed here in Cameroon that could inspire our development in this direction.

Strong leadership Role.

The control of the Ebola, depended heavily on the strong national and international leadership. Not only did the leadership of the affected countries make the elimination of Ebola a national emergency needing government action at the highest level they were actively involved in the sensitization campaigns. Therefore we uphold that when the leaders of any country lead the campaign against any disease, it makes a difference for the better. We know what harm the denial of HIV/AIDS by President Thabo Mbeki did to South

Africa. We also know how that the personal involvement of President Sirleaf contributed significantly to the control of the Ebola crises in Sierra Leone. Back here in Cameroon the direct involvement of the Government through Regional Governors, made possible the distribution of eight million mosquito bed nets for the prevention of malaria. While malaria remains a public health hazard in Cameroon its prevalence has dropped dramatically thanks to the use of ITNs.

Integration of the “One Health” concept into capacity building and health policy implementation

The WHO (2017) defines ‘One Health’ as an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes. It is an obvious fact that no discipline is capable of single-handedly preventing and/or eliminating any disease. The One Health approach prescribes a team work and collaboration including physicians, veterinarians, ecologists, sociologists, economists, educationists, and many others to monitor and control public health threats which require a good understanding of how diseases spread among people, animals, and their environment (CDC, 2017). This concept is particularly relevant in issues like food safety, the control of zoonoses (Ebola, flu, rabies and Rift Valley Fever, etc.) and combatting antibiotic resistance.

Regional offices for One Health are being set up, particularly in hot-spot regions for vector-borne and zoonotic diseases: these include One Health Central and East Africa (OHCEA) in Africa, South East Asia One Health Universities Network (SEAOHUN) in Asia, One Health Sweden in Europe and the Americas (Abraham, 2016). OHCEA is a network of 21 university

institutions (Schools of Public Health and Veterinary Medicine) in 8 African countries among which Cameroon is represented by the University of Buea and Université des Montagnes (USAID One Health Workforce, 2017). Besides, the Cameroon government recently launched the National Programme for Prevention and Control of Emerging and Re-emerging zoonoses. Both initiatives, essentially funded by the USAID, are working hard to build capacity through in-service training, integration of the One Health concept into the teaching curricula, and sensitization of stakeholders on the necessity to incorporate this new disease control strategy from the One Health perspective.

Brief Comments about the control Malaria, tuberculosis and Waterborne infections in Cameroon.

Malaria

There exists a national malaria control programme that is well funded. The programme is based on the distribution of mosquito bed nets and the identification and treatment of malaria cases. Children up to five can be treated for free. This strategy is based on the partial application of best scientific practices in the domain. There are no national programmes for the elimination of the malaria vector—the anopheles mosquitoes themselves. We know from the experiences of island nations like the Seychelles and Mauritius that malaria can be eliminated if vector control is practiced together with the other measures mentioned above. Vector control is said to have succeeded in Kinshasa during the colonial period. Thus it can succeed too in a mainland country like ours. This gives food for thought for our health planners.

Tuberculosis

The control of tuberculosis in Cameroon is based exclusively on chemotherapy using the directly observed treatment (DOT) approach. We know

that overcrowding favors the spread of tuberculosis. What is being done to address this issue in our cities?

Water-borne diseases

Diarrheal diseases are frequent in our cities due to the inadequate supply of potable drinking water. There are long and medium plans to solve the water supply problems in our cities, and indeed in the whole country. In the meantime what affordable best practices can we adopt to address these problems?

Cross-cutting issues

Potable water supply, refuse disposal, in brief general sanitation can have a beneficial impact in our cities if well managed. The slogan—keep this or that city clean ought to be well thought out and enacted into law so that it becomes a national practice. For it is well established that a clean city is also a healthy city.

Conclusions

Cameroonian cities face significant health challenges due to the rapid increase of their populations. There is therefore a need to develop and implement a health delivery system that is efficient, effective, accessible to all and affordable. The development and implementation should benefit from the cardinal principles presented in this essay which include the use of valid scientific knowledge, sensitization and health education; community involvement; mobilization and focused use of resources ; effective leadership and good governance at all levels.

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