



Perspective

Challenges of Cancer Care Delivery in a Resource-Constrained Settings in North-Western Cameroon

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ABSTRACT

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The global burden of cancer as a public health problem cannot be over - emphasized. In the developed countries, Cancer is fast growing out of the reach of trained oncologists and other experts. The burden of the problem is not limited to the developed countries; but recent reports showed that cancer is now a leading cause of morbidity and mortality in resource- constrained developing countries thus making it a major health priority. There is growing need to itemize these challenges to cancer care delivery in such resource-limited settings as a matter of urgency, with the view to particularly emphasize the creation of cost-effective, rational algorithms utilizing affordable chemotherapeutics to treat curable disease. The delivery of comprehensive cancer care in resource-poor settings demands a concerted effort by a team of multidisciplinary care providers, even if they are not trained oncologists. This article seeks to highlight such challenges in managing cancers in the developing world using Bansa Baptist Hospital experience as an example. The communique also suggests ways of improving the care of cancer patients in such settings.

INTRODUCTION

Cancer is a public health problem worldwide affecting all categories of persons, and not just the rich. It is the second most common cause of death in developed countries and among the three leading causes of death in developing countries. The WHO reported that there are about 24.6 million people, who are living with cancer worldwide [1, 2]. Globally, 12.5% of all deaths are attributable to cancer and if the trend continues, it is estimated that by 2020, 16 million new cases will be diagnosed per annum out of which 70% will be in developing countries [1, 3]. Cancer is the leading cause of death in economically developed countries and the second leading cause of death in developing countries. Parkin and Sanghvi [1, 4] reported that in indigenous Africans, 650,000 people of estimated 965 million are diagnosed of cancer annually and lifetime risk of dying from cancer in African women is 2 times higher than in developed countries. The burden of cancer is increasing in economically developing countries as a result of population aging and growth as well as, increasingly, an

adoption of cancer-associated lifestyle choices including smoking, physical inactivity, and diets. According to Farmer et al. [5], the rising proportion of cases in these countries is caused by population growth and aging, combined with reduced mortality from infectious disease and malnutrition.

Although the developing world accounts for about 60% of world cancer burden, they have less than 5% of the treatments available for various cancers [1, 5]. Overall, the case fatality rate from cancer (calculated as an approximation from the ratio of incidence to mortality in a specific year) (Figure 1) is estimated to be 75% in countries of low income, 72% in countries of low-middle income, 64% in countries of high-middle income, and 46% in countries of high income[6]. This clearly marks cancer as a disease of all, especially the poor. Unfortunately, many people in developing countries like Cameroon are still unaware of the danger that lurks in their bodies [7].

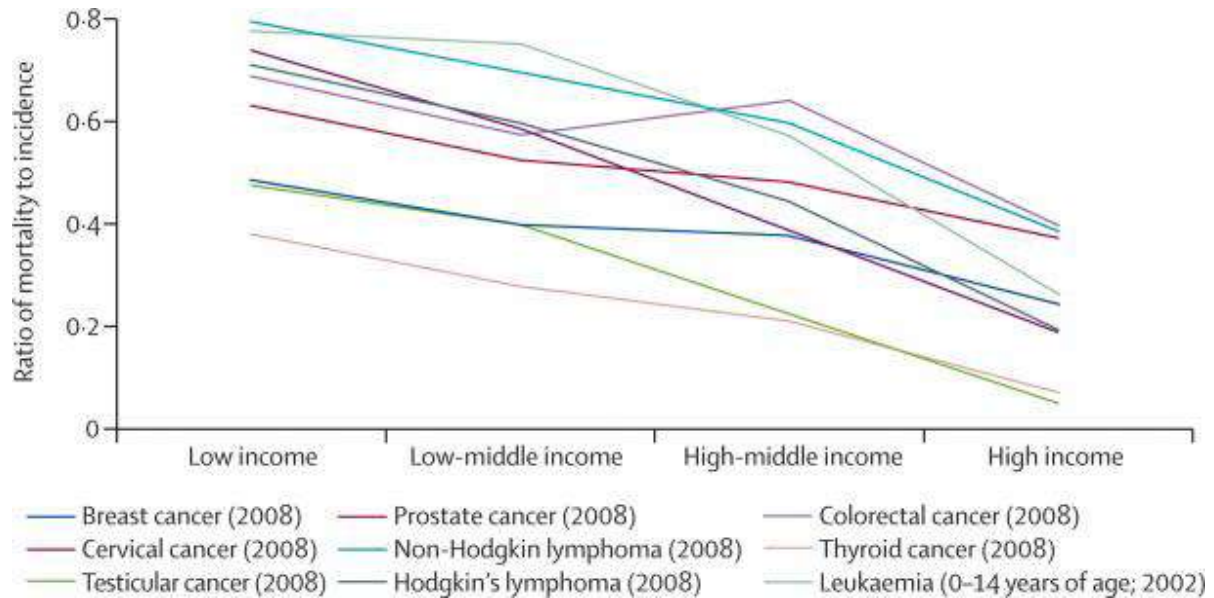


Figure 1: Ratio of mortality to incidence in a specific year by cancer type and country income. Case fatality (calculated by approximation from the ratio of mortality to incidence in a specific year) is much lower in high income countries than in low-income countries for cancers that are treatable, such as childhood leukaemia (0.26 vs 0.78) and testicular cancer (0.05 vs 0.47), treatable if detected early, such as breast cancer (0.24 vs 0.48), or preventable, such as cervical cancer (0.37 vs 0.63). Estimates are based on International Agency for Research on Cancer GLOBOCAN data for 2002 and 2008 (<http://globocan.iarc.fr>) [4].

This study was carried out in Banso Baptist Hospital (BBH), Kumbo- Nso, Bui Division, North- Western Cameroon. BBH is the first of five Cameroon Baptist Convention Health Services (CBCHS) Hospitals. Established in 1949 out of a government cottage hospital with four small buildings and 20 beds, BBH has grown to a current bed capacity of over 250 with staff strength of about 500. The hospital provides services to over 70,000 patients annually (in-patients and out-patients) from all over Cameroon and some neighboring countries.

CHALLENGES OF CANCER CARE IN RESOURCE-CONSTRAINED SETTINGS

One of the primary challenges is lack of awareness of the disease spectrum [1, 7-9]. Many patients present with cancer in stages where the 'oncologist' is almost helpless. The experience in Banso Baptist Hospital, for instance, is that more than 80% of the breast cancer cases present with stage 3 diseases or more. Such negligence, fueled by ignorance, poses a challenge in terms of deciding appropriate (if any) treatment model that can reduce morbidity and increase life expectancy. Besides the delay in presentation, patients in resource-poor settings face a delay in making a diagnosis. This delay can be caused by unsuspecting clinicians, or more commonly, the lack of diagnostic tools/tests. Although clinical examination remains an important tool in making early diagnosis of breast cancer, for instance, mammography can detect cancers earlier thus leading to reduced mortality [10].

However, such screening technologies are largely absent in many District Health Centers in Cameroon. When a doctor goes as far as taking a biopsy of a suspicious lesion, it could take ages for the result to get to the patient. The situation in Cameroon is quite disappointing. Histopathological service is mostly provided in tertiary health institutions. Unfortunately, these Government Reference Hospitals are in few selected urban centers in Cameroon, which are very far from the core rural settings! Worse still, most junior doctors would prefer to 'wait' on the results rather than act on their clinical diagnosis. However, it's worth mentioning at this juncture, the concerted effort of Mission Hospitals like the Cameroon Baptist Convention Health Services providing support to the rural populace in Cameroon. One of such outfits is the Banso Baptist Hospital where cheap and good quality health care is provided in the atmosphere of the gospel [1, 11-13]. Another challenge in delivering cancer care services in resource poor settings is the sheer lack of treatment options. In Low- and Middle Income Countries, access to cancer care is often poor. Although the developing world accounts for about 60% of world cancer burden, they have less than 5% of the therapies available for various cancers [4]. A 2001 country-level survey by the World Health Organization found only 22% of African countries reported availability of anti-cancer drugs, 43% in the South East Asia region and 57% in the Americas [13] (Figure 2).

The global burden of cancer

Region	Population (thousands)	Life Expectancy	Cancer Incidence	Cancer Mortality
Africa	85,558	50.1	649,800 (6%)	506,100 (8%)
Asia	3,823,390	67.5	4,876,900 (45%)	3,355,900 (50%)
Europe	726,338	74.4	2,820,800 (26%)	1,701,500 (25%)
Latin America & the Caribbean	543,246	70.5	833,000 (8%)	480,000 (7%)
North America	325,398	77.4	1,570,500 (14%)	632,000 (9%)
Oceania	32,234	74.1	111,500 (1%)	49,500 (1%)
High-Income Countries	1,203,296	75.8	5,016,100 (46%)	2,688,500 (40%)
Low- and Middle-Income Countries	5,098,167	63.4	5,827,500 (54%)	4,022,200 (60%)
World	6,301,463	65.4	10,862,500 (100%)	6,723,900 (100%)

WHO GLOBOCAN 2002

Figure 2: The global burden of cancer.

Where one finds the drugs, they are very expensive. Typically, breast cancer patients in Banso Baptist Hospital spend at least, 60,000 CFA (\$100 USD) to procure drugs for one course of chemotherapy. This is above the average income of a Cameroonian earned in six months. Chances are that the drugs may be fraudulent or contaminated, as most hospital pharmacies are not able to stock them reliably or economically. In reality, a typical rural Cameroonian woman, who is poor, probably widowed by HIV, with 5 children, must view a diagnosis of breast cancer as a death sentence.

Beyond access to chemotherapeutic drugs is the issue of manpower. The availability of trained human resources and physical resources are fundamental problems in cancer control among developing countries. Cameroon, with more than 25 million people, has probably about 2 'board certified' oncologists [14]. This underscores the need for more primary care doctors to acquire knowledge and skills that would improve access to cancer care. In Banso Baptist Hospital [11], oncology service is delivered by medical doctors and nurses with basic qualifications, ably supported by a network of oncologists in USA and Canada. A comparison published in Tanzania [15] produced striking revelations. Resources to manage this significant burden of cancer are limited. For example, nation-wide, there is 1 medical oncologist, 2 radiation oncologists, and an estimated 4 pathologists. No surgeon's practice is dedicated solely to oncology. These human resources are extremely limited compared to actual need. For perspective, in Canada, a radiation oncologist would typically see 250 new

patients per year. Given that at least half of East African cancer patients will need radiation by one conservative estimate, if each Tanzanian radiation oncologist saw 250 new patients per year, the number of radiation oncologists actually available in Tanzania would be obviously and dramatically below the estimated need. This matches and underscores the picture in most African countries. In our context, there is only one functional radiotherapy machine within the Cameroon about 600km from Banso Baptist Hospital. Thus patients needing this service often have to make a day-long journey to Douala (Western Cameroon) to get 'booked' so they can possibly get radiotherapy on a later date, if the machine does not break down.

Most importantly, there is a dearth of political will or national policy on cancer care. In Cameroon, as in many other resource-limited countries, there is no policy or action plan regarding cancer care [16]. This is despite the backdrop of rising cancer-related morbidity and mortality. Notably too, cancer care is excluded in the National Health Insurance Scheme (NHIS) in Cameroon and Ghana [17-19].

Perhaps, the developing countries are not isolated in attaching less priority to this malady: cancer is notably absent from the global health agenda, including key global health targets such as the Millennium Development Goals (MDGs). Thus, there is the urgent need to prioritize cancer care in developing countries, in terms of accessibility, acceptability, affordability and accommodation of new cases.

SOLUTIONS TO THE MYRIAD OF PROBLEMS

Clearly, investment in health care systems in developing countries is required. For oncology, this includes developing a sustainable supply of trained oncology professionals, expanding the supply of treatment modalities, improving drug supply, physical infrastructure and organizational infrastructure for cancer control [15]. In the first instance, there is need for prevention, early diagnosis and treatment of cancers. Unfortunately in most resource-limited countries, major risk factors such as smoking continue to rise while awareness of the importance of screening and early detection is low. There is widespread stigma associated with cancer and the financial barriers of poverty prevent many people from seeking preventive services or care at early stages. Strong emphasis should therefore be placed on prevention of cancers. Effective tobacco control and provision of HPV immunization would dramatically reduce the burden of lung and cervical cancers, respectively. Working with local and foreign NGOs, Banso Baptist Hospital has continued to support efforts that take breast cancer and HIV awareness programs to the grassroots. Cervical cancer screening and immunization program is on-going at significantly subsidized rate in Banso Baptist Hospital. Although such public cancer preventive campaign by the Women Health Center of the Hospital has resulted in more rural women learning about breast self-examination; there is urgent need to scale up the prevention service.

After prevention the next priority is early diagnosis. We must overcome the challenges of poor knowledge, pessimistic attitudes and counterproductive healthcare practices of the average person in resource-limited countries [1, 7-9]. It will be very important to invest in education and advocacy to combat existing misconceptions and the stigma associated with cancer. There is a need to improve diet and nutrition, to reduce environmental risks, to promote healthy lifestyles and to increase screening and vaccination against cancer-causing infections (HPV and hepatitis B virus). Using the Banso Baptist Hospital model, many rural health facilities can conduct periodic, charitable screenings for breast cancer. It is equally important to scale up the capacity to diagnose cancers histologically. Worthy of note is also the contribution of the general surgical team at Prostate Cancer screening in Banso Baptist Hospital by embarking on routine prostate cancer screening for all patients (including the elderly) with Lower Urinary Tract (LUT) symptoms for early detection of the disease. One approach is to equip more hospitals with facilities to analyze biopsy specimens, but this will require training of more pathologists. In the interim, it will be necessary to form collaborations between hospitals and experts in developing and developed countries in the form of telepathology, such is the situation at the moment with most CBCHS major five (5) Hospitals in collaboration with the visiting American or Canadian specialists. Farmer et al. [5] have shown that it is possible that laboratory technicians in resource-limited settings can be

trained to prepare slides and take photographs through a microscope. Such pictures will be analyzed by pathologists in developed countries and diagnosis made within a short time. This approach will definitely reduce the turn-around time in cancer diagnosis while improving the quality of service patients receive. This collaborative effort is yielding significant dividend for CBCHS. However, for this to work in most District Health Centers in Cameroon, it will be important to provide basic equipment as well as reliable internet connection.

Manpower needs must also be addressed in order to scale-up cancer care. Although it is important to train more oncologists to lead the battle against cancer, it is equally crucial to empower more primary care doctors/generalists to 'hold the fort'. All levels of cancer care need to be accessible at the community level, including prevention, screening and chemotherapy. However, there is a paucity of knowledge on various chemotherapy protocols. In a bid to tackle this, Banso Baptist Hospital, through its global network, is developing a Manual of Cancer Chemotherapy for Resource-Limited Settings [11]. Such effort, if implemented at the regional and national level will positively improve cancer care in the developing world. Preliminary success from such modest effort in empowering generalists in cancer care clearly will debunk the belief that safe and effective cancer treatment is impossible in many poor countries by the shortage or absence of oncology specialists and facilities, treatment guidelines, and regulatory mechanisms. In order to widen the scope of the project at Banso Baptist Hospital, copies of such manual after publication should be distributed at no cost to primary care physicians around Cameroon. Efforts should be made to also start a periodic cancer round-table called CBCHS- Oncology Group (CBCHS-OG). This group is intended to coordinate cancer diagnosis and treatment in the locality of the hospital, could collaborate with the government agencies in the long run. Equally important is access to treatment modalities. Although resources are lean in developing countries, cancer treatment does not have to cost a fortune to be effective. According to Farmer et al. [5], "low-cost and effective treatment options are available for several malignancies, including cervical, breast, Burkitt's lymphoma and testicular cancer, and childhood leukemia." Unfortunately, these interventions for early detection and treatment remain inaccessible for many people in developing countries. Many of the cancers that pose the greatest burden in developing countries are amenable to treatment with drugs of proven effectiveness that are off-patent and can be marketed generically at affordable prices. These drugs should be a focus of cancer treatment programs, rather than expensive on-patent drugs. The global community should empower poorer countries to manufacture generic antineoplastic agents. Just like in HIV care, such policy would reduce the cost of cancer care drastically.

CHILDHOOD CANCER PROGRAM

It is estimated that about 250,000 children are diagnosed with cancer every year worldwide. Though most childhood cancers are curable, less than 30% of children with cancer survive in developing countries due to unavailability or inaccessibility of care [12]. Due to ignorance compounded by poverty, most parents in Africa and especially those in rural Cameroon take their child to the hospital only when the disease is at an advanced stage or has spread to several parts of the body, thus making it more difficult to treat and resulting in untold pain for the child [12]. In Cameroon, the commonest cancer in children is Burkitt Lymphoma with an incidence of about 5/100,000 in children less than 15 years of age. It is a fast growing cancer that always presents as a swelling, which could double in size in 2-3 days. The swelling usually occurs on the jaws, face, abdomen, and limbs. They are painless at onset, but become painful as they grow big and begin to invade neighboring tissues [12].

In 2003, the Cameroon Baptist Convention Health Services (CBCHS) launched a program to treat and manage Burkitt lymphoma in response to the scarcity of such services in Cameroon. The program which started casually at Banso Baptist Hospital in 2003 but painstakingly led to the development and adoption of what became known as the "Cameroon 2008 Burkitt Lymphoma Protocol". The program then spanned to Mbingo and Mutengene Baptist Hospitals in 2006 and 2007 respectively. Since inception, it has successfully treated over one thousand patients [12]. A recent follow up of patients treated between 2003 and 2013 revealed that hundreds of survivors now live healthily, some over 8 years after discharge. In order to increase the quality of children's lives and that of patients' families, the program provides comprehensive palliative care services to cater for children who cannot be cured. Patients who suffer structural and functional difficulties after being cured of Burkitt Lymphoma are rehabilitated at the Saint Joseph's Children and Adult Home (SAJOCAM) in Bafut following a MoU signed with the facility. The program works collaboratively with the North West Cancer Support Group (NWCCPOC) to educate, identify and refer patients and suspected cases for treatment. The CBCHS Burkitt Lymphoma Program's practices, tools and policies align well with international standards and the program is working hard to scale up the service across the country to limit children cancer [12].

The "**Burkitt Unit**" of the CBCHS as popularly called has evolved over the period and covers the management of other Childhood Cancers otherwise referred to as Childhood Cancer Program with very satisfactory outcomes; these malignancies include Retinoblastoma, Rhabdomyosarcoma, Nephroblastoma (Wilm's Tumor), Neuroblastoma, Osteosarcoma, and Kaposi Sarcoma. The Childhood Cancer Program covers free diagnostic support, free chemotherapy services, comprehensive palliative care and palliative home visits as well as long-term follow up of treated children with any cancers up to the age of 15 years. The scheme also grants emergency

oncologic care for Childhood Cancer patients with spinal compression syndrome. The practice is evidence-based and in compliance with the International Society of Paediatric Oncology (SIOP) protocol. There is concerted effort to expanding the services of the Childhood Cancer program to other facilities of the CBCHS as well as a growing Cameroon national grassroots campaign to promoting awareness of childhood cancer and express support to children with cancer, and their families. It also spotlights the need for more equitable and better access to treatment and care for all children with cancer everywhere.

Another strategy that has worked in cancer care in Banso Baptist Hospital is international collaboration. Since it is obvious that the battle against cancer cannot be left for the tertiary health facilities alone, we have formed key collaborations that enable the hospital offer similar services. Surgical cancer treatment is now obtainable through strong partnership with Earth wide Surgical Foundation. Such Collaboration with Brigham and Women's Hospital through Earth wide Surgical Foundation can improve our pathological services to world class standard. Specimens are analyzed periodically at the pathology department of Mbingo Baptist Hospital for our patients. Supported by our network of oncologists around North America and Europe, we have been able to provide comprehensive cancer chemotherapy service to patients with a variety of treatable malignancies including breast, cervical, rectal, endometrial, head and neck cancers, Hodgkin and non-Hodgkin lymphoma, and Kaposi sarcoma. This approach is similar to the scenario in Rwanda and Haiti, through a partnership of Partners in Health and the Dana-Farber Cancer Institute, Harvard Medical School, and Brigham and Women's Hospital [5].

Lastly, it is extremely important to form a concise national policy on cancer in resource-limited settings. This would make cancer a priority disease, and would ensure adequate resource allocation for its control. Putting cancer care on the National health insurance plan, just like in Mexico and Jordan [5] would have a huge impact. Donor support for cancer care needs to be strengthened, as has been done with HIV/AIDS, tuberculosis and malaria. Only a national action plan on cancer will ensure the deployment of appropriate tools such as cancer registry, training programs and research.

CONCLUSION

The time has come to challenge and disprove the widespread assumption that cancer will remain untreated in poor countries. Against the earlier notion of cancer as a rich-man's disease, there is a rising epidemic in low and middle income countries. It is our proposal that cancer care can and should be made accessible, available, affordable and feasible in most communities in resource-limited settings. Although, traditionally, the war against cancer has been left for trained oncologists and

related professionals, practical experience in Banso Baptist Hospital has shown that primary care doctors can be empowered to administer effective chemotherapy for a variety of cancers. Only a concerted effort against cancer, under a national cancer policy can sustain this small success at a rural hospital for the poor in the Cameroon.

Informed consent

Informed consent was obtained from the index unit (s) before submission of this manuscript.

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Conflicts of interest

The author declares that there is no conflict of interest

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