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Commentary

Empowering our profession in Africa



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Introduction

‘Empowering our profession’, the previous commentary published here in **World Nutrition** in February, proposes a set of core competencies meant to define public health nutrition practice (1). Its concept of ‘core public health nutrition functions’ is compelling. While the set of competencies is supposedly relevant in all contexts, it is as stated, mostly adapted to high-income countries and well-resourced settings, and further adaptations are required for low-income settings. This commentary makes the case for more and better university-trained nutrition specialists as members of health teams at all levels from national to local, in sub-Saharan Africa. This is critical to address both undernutrition and nutrition-related chronic diseases.

Box 1

My co-signatories

While this commentary is my responsibility, I owe special thanks to a number of colleagues and friends, advisors who I regard as my co-signatories. These are

S. Besançon, Santé-Diabète, Mali
Jean-Claude Mbanya, President, International Diabetes Federation
Abel Dushimimana, Nutrition Advisor, WHO/AFRO
Anil Kapur, Director, World Diabetes Foundation
Claus Leitzmann, University of Giessen
Michel Makoutodé, Director, Regional Public Health Institute, Benin
Patrick J. Stover, Cornell University, US

African issues

First then, here are some issues specific to Africa, where there is a dearth of professional nutritionists. Until the profession is regulated, we will continue to encounter ‘nutritionists’ who have had only a few weeks or months of training. Nutrition is a complex discipline. It draws on several health, biological and social sciences; actually, it should be regarded as a multi-science. Competent nutritionists require several years of theoretical and practical training. Furthermore, the very field of nutrition should be better defined; currently its specificity and boundaries are hazy. Nutrition encompasses the various dimensions of the relationship of human beings with their food: biological, of course, but also psychological, social, political, economic, and environmental (2). When these dimensions are ignored the discipline is

no longer nutrition; it is more likely really to be say food science, biochemistry, or agriculture.

In Africa the relevance of current training programmes has to be questioned. Competency-based training is a need and a must. But changes from objectives to actual real practiced competency will only take place progressively in training programmes. Objectives in terms of knowledge, attitudes and skills will no doubt continue to be pursued, but it is primarily in assessment methods that objectives and competencies differ.

The numbers to train and the relevance of training amount to one issue. Another is the level and the extent of specialisation. The whole workforce for nutrition can be seen as a pyramid, from PhDs at the top, to technicians at the base. The higher up in the pyramid, the higher the level of responsibility and perhaps also, the more specialised the workforce. Public health nutrition is already a field of specialisation at MSc level. The previous *WN* commentary (1) sees public health nutrition as a specialisation within public health. It needs also to be seen and practiced as a specialisation of general nutrition, at least for some professional nutritionists trained at the undergraduate level to work in several settings, whether community, clinical or private. Undergraduate training in general nutrition is best, for public health nutrition practice and further training. Public health nutritionists should indeed be distinct specialist practitioners. Even in the field of public health, nutrition is all too often forgotten or minimised unless it makes itself visible and explicit.

High-income countries can afford specialists in public health nutrition. Low-income countries cannot. What Africa needs now is a strong cadre of professional nutritionists trained in general nutrition practice at the undergraduate level, representing the base of the higher education pyramid. For this general practice, they require a thorough knowledge and understanding of food composition, food systems, food behaviour, nutrition requirements and recommended intakes, in addition to public and clinical nutrition.

In low-income countries there should be no marked separation between public health and clinical nutrition. Treatment of severe malnutrition cannot be rationally dissociated from management of moderate malnutrition and its prevention. There is wide consensus on prevention of chronic diseases, but nutritional management of those already affected say, with diabetes, cardiovascular disease, or hypertension, and of the sick and hospitalised, at high nutritional risk, is also needed.

This is the rationale for training professional nutritionists for general practice, before specialising some of them in public health nutrition at MSc level. This is what I and colleagues are doing in partnership with Abomey-Calavi University in Benin, West

Africa, for the Francophone region. We took advantage of the higher education reform toward a standard L-M-D system (equivalent to BSc-MSc-PhD) to develop a professional BSc programme (3 years) in nutrition and dietetics, and an MSc programme (2 years) in public health nutrition, defining complementary competencies.



The first graduates in the regional master's programme in public health nutrition, offered at the regional institute for public health, Ouidah, Benin

Nutrition is central to development

Investing in nutrition is crucial for health, for food sovereignty, for human rights, for economic development, and for social protection. The World Bank positions nutrition as central to development (3). But while progress has been noted in most regions, sub-Saharan African Africa has stagnated. In Africa in 2010, well over one-third (38 per cent) of under-5 children were stunted, only 2 percentage points lower than in 1990 (4). According to available data, the prevalence of anaemia is highest in Africa, with nearly a half (47.5 per cent) of under 5 children, and two-thirds (67.6 per cent) of women, affected. An estimated 2 per cent of under-5 African children and 10 per cent of African pregnant women experience night blindness, dangerous especially in rural areas, and the first clinical sign of vitamin A deficiency.

Meanwhile, the prevalence of overweight and obesity is rapidly increasing in several African countries, particularly among women, with rates reaching almost one-third to

a half (30-50 per cent)(5). Obesity predicts chronic diseases (also now known as non-communicable diseases), in particular diabetes and cardiovascular diseases. Chronic diseases are currently responsible for nearly two-thirds of world deaths, and four-fifths of these occur in low- and middle-income countries (6). For diabetes alone, the prevalence in sub-Saharan Africa ranges between 3 to 7.7 per cent in cities and from 1 to 3.5 per cent in rural areas, and is rising rapidly, from a total of an estimated 12 million in 2010 to a projected 24 million in 2030 (7). Recent food and economic crises have affected Africa, exacerbating household food and nutrition insecurity (8).

Nutrition needs to be central to all renewed commitments and efforts to achieve the Millennium Development Goals (9) and to halt the progression of chronic diseases. Out of the seven Development Goals, three are directly connected with nutrition, including the first one (reducing poverty and hunger by half). The fact that some goals are far from being achieved may be partly because of insufficient emphasis on nutrition. The Political Declaration of the recent UN high level meeting on non-communicable diseases (10) recognises the key role of nutrition in the prevention and control of these diseases, partly by means of implementation of the current WHO global strategy on diet, physical activity and health (11). It acknowledges the double burden of nutritional deficiencies and obesity and other chronic diseases in Africa. Importantly, it emphasises poverty as a cause and an effect in both cases.

Much is currently being said and written about scaling-up nutrition, as in the SUN initiative, to meet the Development Goals, and this is good news (12-14). But sadly and wrongly, undernutrition is the only focus, and only undernutrition is considered in the Goals. Nutrition-related chronic diseases are not explicitly addressed in the Goals, and this omission will no doubt be corrected when they are revised.

Acting more effectively on undernutrition, on a larger scale, will contribute to halting the progression of chronic diseases. Undernutrition in *utero* or in the early years increases subsequent risk of these diseases (14,15), and poor maternal nutrition impacts on the next generation (17). Furthermore, inadequate nutrition, whether associated with deficiency disorders or chronic diseases, is rooted in poverty and deprivation (10,18).

Nutrition and chronic diseases

The social and economic cost of chronic diseases is staggering (17). Close to two-thirds (63 per cent) of all deaths worldwide are now caused by these diseases, of which four-fifths (80 per cent) occur in lower-income countries. Chronic diseases are a threat to the economies of many countries, and they further exacerbate inequities

among and between them (10). The rapid increase of chronic diseases, while communicable diseases and nutritional deficiencies still prevail, amounts to a double burden of malnutrition.

Unhealthy diets are recognised in the Political Declaration (10) as a cause of several chronic diseases including diabetes and cardiovascular disease. In lower-income countries these are no longer confined to wealthier families and communities. In cities in particular, poverty and food insecurity are linked with malnutrition and also with chronic diseases. Energy-dense, cheap foods that impoverished families resort to, contribute to obesity in adults while depriving children of essential nutrients for normal growth and development (18). Eradicating poverty is the fundamental strategy to reduce chronic diseases and the double burden of malnutrition.

Urbanisation is irreversible. With economic globalisation and technological revolution, it propels the nutrition transition and thus the upsurge of chronic diseases, even in low-income countries of Africa. This transition is made up from changes in dietary patterns and ways of life (20), and thus increased prevalence of obesity, diabetes, cardiovascular diseases, some cancers, and other chronic diseases. There is also a shift from long-established and traditional diets towards food supplies and dietary patterns previously typical of fully industrialised countries: more saturated fat, fat, sugar, salt and energy-dense ultra-processed products including snacks and soft drinks, and generally a decline of fresh foods and home-prepared meals (21-23).

The double burden

African countries, and also other low-income countries, are now beset by chronic diseases. This double nutritional burden (24), which is to say, the co-existence of malnutrition and nutrition-related chronic diseases, links fetal or infant malnutrition with a predisposition to obesity, high blood pressure, heart disease and diabetes in later life. The double burden widens the health gap between men and women (17). The synergistic interaction of malnutrition and nutrition deficiencies in early life, with further increased risk of chronic diseases among populations exposed to malnutrition during fetal life or early infancy, is of major concern in Africa (25-27).

In Africa and other low-income countries, it may be cost-effective to focus chronic disease action on the prevention and control of diabetes (28-30). In contrast, obesity is not as yet perceived as a health problem, and high bodyweight, particularly among women, is often culturally desirable (31). Prevalence of hypertension is high among Africans, but the respective roles of genetic, environmental and behavioural factors (other than salt intake) are still unclear (32). Nutrition is important in these

conditions, but the 'how' to act in Africa is vague. One reason for sure, is the lack of properly trained nutrition professionals.

Traditional food cultures

There is a compelling need for prevention of chronic diseases, as well as of nutritional deficiencies. Adequate and healthful food supplies, which often have much in common with long-established food cultures, need to be protected, although their dietary diversity may need to be improved (33). Healthy eating is the cornerstone of treatment as well as the prevention of diabetes. It came as a surprise to see not one mention of nutrition, diet, or even food (except for availability) in a paper on diabetes care with meagre health resources in sub-Saharan Africa (34).

In order to halt the progression of obesity, diabetes and other chronic diseases in least-resourced and impoverished countries, the causes of these diseases that can be changed need to be confronted. These include patterns of diet and physical activity. As mentioned, long established traditional food cultures, often higher in vegetables, fruits and dietary fibre than industrialised food supplies, should be protected and revived, and regular physical activity should again become the social norm.

Food systems and ways of life typical of industrialisation in its modern and current forms are by and large determined by forces of economic globalisation, privatisation of public services, and deregulation especially as this has led to the vast expansion of transnational corporations (35-36).

Food-based dietary guidelines that take account of local and regional food cultures should be compiled, published and made widely available (37). For those already diagnosed with diabetes, health professionals should be available to advise how to eat healthily and to make appropriate changes in diet. All this means that many more adequately trained nutrition professionals are needed in sub-Saharan Africa (38).

Nutrition in pregnancy and infancy

In Africa most of all, improved nutrition of women and infants is crucial. This improves reproductive health and child survival in the short term. It also protects against obesity and chronic diseases in the longer term and for following generations (5). The time of pregnancy and the first two years of life are now well-known as the 'window of opportunity' to reduce risk of disease in infants and young children (39).

Maternal undernutrition, or at the other end of a spectrum obesity, gestational diabetes, or pregnancy-induced hypertension, all put infants at risk. The partnership for maternal, newborn and child health first launched by WHO in 2005 (<http://www.who.int/pmnch/en/>) should bring nutrition to the fore. In Africa, nutrition must be made part of prenatal care, as it should be everywhere else (40).

Nutrition is often a neglected component of maternal and child health programmes. Most likely this is because those who should provide prenatal care are not aware of the importance of nutrition, or do not have the time for it, or do not know about nutrition. Similarly, the first two years of life are critical not only for optimal growth and development, but also to reduce the long-term risk associated with low as well as high birthweight.

In the most recently issued WHO review of key interventions for maternal and child health (41), nutrition interventions identified as essential at community and primary level are primarily micronutrient supplementation (iron, folate, calcium) in pre-pregnancy and pregnancy. It is disappointing to find no mention of nutrition monitoring and counselling. Nutrition is not positioned as part of the antenatal care package, except for anaemia. The WHO guide lists 'advice and counsel on nutrition and self-care', but without making links for example to haemoglobin level, weight or weight gain, current dietary practices or household access to food. There is no mention either of nutritional management of gestational diabetes, which is fairly common now in low-income countries. Nutrition counselling only appears for mothers in the post-natal period but here again no link is made with poor nutrition and future health risks for mother and child.

As in other nutrition interventions, evidence of impact of nutrition monitoring and counselling in pregnancy may be lacking, due to lack of human resources and funds for this type of research. Here there is a vicious circle: no research, no scientific evidence, no evidence-based nutrition practice; no research, no evidence...

Undernutrition: no longer the only focus

In nutrition as well as in other health disciplines, human resources are needed, for intervention, policy, and research. The importance of generating new knowledge locally through research and to apply research results in policy and programming, even in low income countries, is now widely recognised (42). Knowledge generation through research is relevant at PhD level, and also at MSc level. MSc programmes must be developed or strengthened before PhD programmes can be developed.

Most of all in Africa, nutritionists are needed to work as active health professionals, to address 'over-nutrition' (which usually is mainly of dietary energy) as well as under-nutrition. This is an urgent and compelling need to address obesity and chronic diseases. The promotion of sound eating practices and the nutritional management of diseases are among the tasks that professional nutritionists should have. Competent specialists are also needed, to train other professionals and field workers, for advocacy with governments, to design and evaluate nutrition programmes, and to interact with the food and pharmaceutical industry.

Nutritionists trained at BSc level would enable physicians and nurses to fulfil the tasks they are trained for. There is at this time an acute shortage of doctors and nurses in Africa, where 36 of the 57 countries with critical shortages are located (43). A recent statement by the Africa Public Health Alliance calls on African education ministers to prioritise development of multi-sectoral human resource development plans, to meet Africa's development goals. It emphasises that most African countries are operating at between a quarter and at best three-quarters of the required human resources capacity. Thus Nigeria has about 25 per cent of the physicians the country needs, 45 per cent of nurses and midwives, and only 12 per cent of the needed pharmacists (44). However, there is no mention of need for nutrition professionals.

Needed: well-trained professionals

In the *Lancet* report of the global commission on education of health professionals (45), the vision is that all health professionals be educated to mobilise knowledge, and to engage in critical reasoning and ethical conduct. In this way they will be competent to participate in patient-centred and population-centred health systems. Competency-based training is essential for relevance and quality of training. The need for strengthening capacity is also stressed in the UN Political Declaration (10).

So why in Africa especially, are there so few nutritional professionals and specialists working in the health sector? And why is this fact not recognised as an acute problem? One reason may be that the scale and width of nutrition as a discipline and in practice, engaged with social, economic, environmental as well as biological and behavioural aspects of life (2,46-48), is not yet well understood.

Even where graduates in nutrition are available, they often lack training in practical skills. The resulting lack of self-confidence, combined with low salaries and low status, results in many of them taking other jobs. Another barrier is the absence of training models, notably in French-speaking sub-Saharan Africa. Formal university training in nutrition from undergraduate to doctorate level has not been part of French academic culture, at least up to recently.

Several organisations involved in maternal and child health, and more generally public health, now offer short sessions of in-service training for field workers in nutrition. Such training is indeed needed, for instance for management of acute malnutrition, growth monitoring and promotion, or prenatal nutrition. But nutrition specialists are required for such training' Local training of these specialists should become feasible. In the clinical setting, training of physicians may positively impact on their nutrition counselling practices, as shown in Brazil (49). This training should be given by nutritionists with appropriate competencies in clinical nutrition.

In several low-income countries of Africa, nutritionists are trained to address undernutrition, but not chronic diseases. Nutrition training programmes tend to focus on food production, composition, and technology. This expertise is vital in the context of food insecurity and child undernutrition, but is not sufficient.

Nutrition is interdisciplinary. It is at the crossroads of agriculture and health. Human resources in nutrition are needed in both sectors. Nutrition should also strive to meet the needs of patients and populations (47). There is an absolutely urgent need for health professionals adequately trained in all aspects of human nutrition, including nutrition counselling, communication for behavioural change, and nutritional management of chronic conditions and diseases such as obesity, diabetes, hypertension, and cardiovascular disease.

Good nutrition governance and leadership require use of the training pyramid. PhDs are needed at the top of the pyramid, but without university-trained MSc and BSc graduates, as well as technicians, the pyramid has no base. There is a tendency in Africa, at least in French-speaking sub-Saharan countries, only to consider the MSc level for nutritionists, whereas in British academic culture, nutritionists at BSc level carry out much nutrition work in the health, agriculture and education sectors.

In West Africa, BSc and MSc programmes are now being developed. Following a workshop on nutrition training needs in West Africa held in Dakar in March 2009, a resolution on action for nutrition was adopted by the assembly of health ministers in Côte d'Ivoire (50). The assembly called for attention to capacity building in public health nutrition, and called on the West African Health Organization to host the coordinating center for the West Africa public health nutrition research and training initiative launched during the Dakar workshop. The participants underlined the need for more public health nutrition training programmes at all levels, including undergraduate education, pre-service and in-service professional training, and higher education and related research skills.

Based on the recommended needs of 100-500 BSc, 10-50 MSc, and 5-25 PhD- level nutritionists per 5 million people, it is estimated that for the whole of West Africa, a

minimum of roughly 600 BSc, 60 MSc and 30 PhD nutrition graduates are needed every year. The current level is far below that, at 120, 140 and 14, respectively (51).

There is a very wide gap between needs and reality in undergraduate training. There is also the issue of quality: training needs to be relevant, connected with policy, programmes and research, and competency-based. Accreditation and licensing systems for nutrition professionals will ultimately be required, at least at regional level, in order to ensure that training and practice meet established standards. Otherwise, 'nutritionists' may use this title after only a few weeks of training, which undermines our professional credibility.

New developments in West Africa

It has long been argued that professionals should be trained in their own countries, that training overseas may not be appropriate for the competencies needed, and that there is a brain-drain favouring wealthy countries. But for Africans there are more opportunities to train abroad, and very little support for university studies in Africa. It seems now though that there is a small shift towards supporting students to remain in their home institutions rather than train overseas (52). Low-income countries are in urgent need of support for local higher education in various health-related disciplines, particularly in sub-Saharan Africa. In some health fields, for instance malaria, funding has been provided for a consortium of African universities to strengthen their doctoral training capacity, and the results are being assessed (52).

Nutrition needs such support in Africa. Transnut (the WHO Collaborating Centre on Nutrition Changes and Development) of my own department of nutrition at the University of Montréal, with funding from the Canadian International Development Agency, has provided technical support to institutional partners of the Republic of Benin to develop two university programmes in nutrition for the French-speaking region. These are a BSc programme in nutrition and dietetics, and an MSc programme in nutrition and population health (www.poleDFN.org). These programmes are now in operation, the former at the faculty of health sciences and the latter at the regional public health institute of Abomey-Calavi University. African universities will be in a better position to provide high quality training at all levels of nutrition to a growing number of students, if a great deal more support is provided, taking all appropriate forms, including scholarships.

According to a report on education of health professionals (53), gross under-financing of education explains much of the glaring deficiencies that do so much harm to health-system performance. The report states that every country and relevant agency should double its investments in professional education in the next

five years. Education of nutrition professionals at all levels needs to be explicitly identified here. A recent manifesto addressing the worldwide need for properly trained health professionals, particularly in resource-poor countries (54), specifies midwives, pharmacists and laboratory technicians in addition to doctors and nurses. Nutritionists need also to be explicitly specified.

Public financing is the most sustainable source of funding for higher education in all countries. There is a need for other actors to contribute. Several large non-government organisations hire nutritionists whose overseas training has oftentimes been sponsored by governments or other actors. Users should be payers, and these organisations should support higher education in nutrition. They could provide scholarships, or better still, unite to create a scholarship fund. Also, I believe that other civil society organisations, and industry as well, should invest in university training in low-income countries.

It has been suggested by the expert committee on the strategic role of Canada in global health (53) that as part of capacity building, centres of excellence with dedicated funding for education, training, and research, be established in selected lower-income countries. Such centres, including some dedicated to nutrition, are urgently needed now in sub-Saharan Africa, in themselves and as exemplars.

Conclusion

The previous commentary in capacity building published in ***World Nutrition*** (1) took a global view, while being mainly focused on well-resourced and high-income settings (55,56). This commentary here, in which I have been guided and supported by the colleagues acknowledged in Box 1 above, focuses on less-resourced and lower-income settings, and specifically sub-Saharan Africa and the Francophone countries of West Africa which I know best.

It is absolutely urgent and essential now, to face and address the double burden of malnutrition in sub-Saharan Africa. This means that many more competent and professionally trained nutritionists, at all appropriate levels, are needed. They will need to have a good understanding of what is involved in preventing and controlling obesity and also the chronic non-communicable diseases which until recently in history were uncommon or even rare in most African countries.

At the same time, energetic policies and actions are needed in order to address poverty and thus also inequity, as systemic basis of both deficiency disorders and

non-communicable diseases. It is imperative to reinstate, protect, preserve and as needed adjust long-established traditional food systems.

All this means that balanced pyramids of university-trained nutrition professionals and specialists, as members of health teams at all levels from national to local, have to be constructed. Governments, UN and other international agencies, and professional and other civil society organisations need to come together and work together to achieve this, now.

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