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# Routledge Handbook in Global Public Health

Edited by Richard Parker and Marni Sommer

## Chronic Diseases

### The Urgent Need for Action

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#### The overarching problems of chronic disease

Chronic diseases, including CVDs such as coronary heart disease, stroke, and hypertension, as well as cancer, lung disease, and diabetes mellitus, account for most deaths in nearly all regions of the world except sub-Saharan Africa. The peak mortality from CVD occurred in the 1960s in the United States, in the 1970s in Western Europe, and in the 1980s and 1990s in Eastern Europe. While infectious diseases, lack of nutrition, and poor childbearing practices are claiming fewer lives in developing countries, deaths attributable to chronic diseases are rising (Levenson *et al.* 2002; Yusuf *et al.* 2001). This current epidemiologic transition in developing countries, a collision of emerging epidemics of non-communicable diseases and injury, with existing epidemics of infectious diseases, malnutrition, and complications of childbirth, creates complexity in countries where health infrastructure is often inadequate to deal with already existing health challenges and needs, and where health systems are often not agile enough to respond with the development of preventive and cost-effective interventions. This chapter provides an overview of the problem of chronic disease, and the urgent need for action globally, with a specific focus on CVD, a term we will use to encompass coronary artery disease, hypertension, stroke, and diabetes.

The steady global rise of non-communicable disease has occurred in parallel with changing social and economic circumstances. A massive migratory movement is occurring with the shift of populations from rural settings to cities. The movement is complicated because many cities are not citadels of shining affluence, and contain pockets of poverty, especially around the edges. Likewise, the features of city living that create the greatest cause for concern when it comes to contributing to chronic disease, such as easy availability of cheap, processed, high-fat, high-salt, and calorie-dense foods and beverages, including alcohol, and the loss of opportunities for incidental physical activity, are realities that are also beginning to permeate rural life.

These changes in the environment in which hundreds of millions of people live, combined with a simultaneously relentless effort by the tobacco industry to recruit smokers among people in developing economies as industry markets shrivel in more developed, health-conscious countries, suggest the need for preventive programmes aimed not only at high-risk individuals,



but at entire populations who stand at heightened risk of chronic disease, especially diabetes mellitus and cardiovascular disorders (CVD).

The subsequent economic effects of non-communicable chronic disease are especially damaging in developing countries, in large part because many of the chronically ill are of working age. For instance, it is estimated that globally the greatest cumulative proportion of CVD deaths in the next 20 years will occur in those 65 years and over (Leeder *et al.* 2004). However, what is perhaps more striking is that the comparative cumulative CVD death percentage for those between 35 and 64 will increase dramatically. This will affect the economic 'bottom line' at both a macro- and micro- level, decreasing the national productivity of affected countries, while also bankrupting individuals and their families because they cannot work and are unable to afford their out-of-pocket health care expenses (Leeder *et al.* 2004).

Four decades of focus on reproductive maternal health have tightly bound the concept of 'women's health' to that of childbearing and motherhood. These remain, of course, important dimensions, but they are no longer (if they ever were), the only ones critical for addressing women's health needs in emerging economies, especially during the years of family formation. In fact, chronic diseases like CVD exact a much higher mortality toll among women in their reproductive and motherhood years than reproductive-related causes that receive the largest share of research, funding, and policy attention.

Chronic disease is often thought of as a disease of the elderly. For women in particular, it is not that simple. In Latin America, for women aged 35 to 44, an estimated 40 to 55 per cent of mortality is attributable to non-communicable chronic diseases (such as CVD), compared to less than 10 per cent of mortality attributable to causes associated with childbearing and HIV/AIDS combined (Raymond *et al.* 2005). In South Africa and China, non-communicable chronic diseases account for a much higher proportion of deaths among women of late childbearing or early motherhood ages, compared to mortality attributable to causes associated with childbearing (Raymond *et al.* 2005).

The burden of non-communicable chronic diseases is matched by highly prevalent antecedents such as obesity. While the impact of low-cost, high-fat, high-salt, calorie-dense food and reduced physical activity are first manifest among the newly affluent in developing economies, this group can alter its lifestyle. The educated and well-to-do in developing countries are likely to be the first to realise the need for behavioural and other changes to reverse their risk, based on the experiences from high-income countries. Those who are less educated and less wealthy will be more likely to keep smoking, eat high-fat food, and not act to protect their health. The less affluent or overtly poor acquire these behaviours, but lack the education and affluence to get rid of them. The ongoing burden of death and disability from chronic disease is likely, therefore, to fall on the poorer (although possibly not the very poorest) sections of society, as it continues to do in more-developed countries (Leeder *et al.* 2004).

Obesity is also a phenomenon that must be disaggregated by gender. In the Middle East, the proportion of women who are obese far exceeds that of men in all countries. This is exemplified by Egypt, where 45 per cent of women are obese ( $\text{BMI} \geq 30\text{kg/m}^2$ ), and Kuwait and Bahrain, where 30 per cent of women are obese (WHO 2010a). Also in Egypt, deaths from CVD and/or diabetes are 15 times more common than deaths from reproductive health causes in women aged 35–44. Illustrating a health differential across the globe, CVD death rates for women aged 55 in Egypt are ten times those in the US (WHO 2010b). Living in low-income countries certainly does not immunise women against non-communicable chronic disease mortality at relatively young ages. In fact, the exact opposite has shown to be true.

The narrow definition of 'women's health' in global public health that has long focused on reproductive conditions and diseases needs to reflect this changed epidemiology. Likewise, with

rising levels of obesity among children and adolescents, non-communicable chronic diseases must become part of a global definition of women's and children's health that matches a changing epidemiological reality.

### *Responses to non-communicable chronic disease*

To combat non-communicable chronic disease in vulnerable populations requires a focus on prevention at the level of the population, supplemented by efforts to detect and treat early those at special risk, including children (Leeder *et al.* 2004). The potential benefits associated with this course of action, such as helping those with pre-diabetes to reduce their risk of developing diabetes and CVD, and reducing children's exposure to tobacco advertising, are not yet fully appreciated, especially in low- and middle-income countries.

When we consider the implementation of population-based approaches to prevention, it is easy to see why spirits fail and enthusiasm evaporates given the magnitude of the challenge – not unlike that of addressing climate change. First, there is the likely extended future duration of required action to effect change. Second, the necessary strategies, learned from efforts over the last few decades in developed countries – inter-sectoral action, political persuasion, battle with vested commercial interests and greed, social marketing of uncomfortable messages about what we eat and how much exercise we take – are also daunting. Third, and crucial to the success of any social change that might diminish the risk of chronic disease, is recruitment of the population to healthier lifestyles. Fourth – and this should never be discounted – the experience of many millions of people is that trade and commerce, and the move to the cities that economic progress has enabled, have made a massive, positive contribution to their quality of life and to chances of their children surviving, receiving an education, and progressing to a better life. The cards, therefore, are stacked against those favouring, as the late Professor Geoffrey Rose put it so memorably, 'sick population' approaches to prevention (Rose 1985: 1).

Unfortunately, the population-based prevention strategies, such as immunisation and attempts to change lifestyle characteristics, of enormous potential importance to the population as a whole, offer only a small benefit to each individual, since most of them were going to be all right anyway, at least for many years (Rose 1985).

Therefore, it would seem preferable to just seek out the high-risk individuals and treat them. Help them to quit smoking, to treat their elevated blood pressure and cholesterol, maybe even help them to change their diet. Combine this approach with an endorsement of the recommendations contained in the Framework Convention on Tobacco Control (WHO 2010c), such as price and tax measures to reduce the demand for tobacco, and non-price measures to reduce the demand for tobacco (namely, protection from exposure to tobacco smoke, packaging and labelling of tobacco products, and education, communication, training, and public awareness), and you may be doing the best that is possible in a near-impossible setting.

In the short term, as Rose (1985) acknowledged, an approach to 'sick individuals' may be the best tactic. There is no future, however, in restricting our strategies to the detection and treatment of sick individuals – we will be treating high-risk people for as long as the social and economic conditions that create their problems are not dealt with. Realistically, many chronic diseases will require that we take both approaches – that we use case-centred epidemiology to identify susceptible individuals (the 'high-risk strategy') and, at the same time, attempt to control the determinants of incidence (the 'population strategy'). The Finnish North Karelia project documents the benefits attainable in a 'sick population' approach that focused on community risk rather than individual risk (Vartiainen *et al.* 2000).



All of these concerns do not mean that the task at hand is impossible. Social movements do not owe all their origin and power to carefully considered and organised programmes designed by experts. To believe that the affected communities are not concerned by the problems they are experiencing is naïve. For instance, many economically advanced societies have witnessed a downturn in CVD mortality and morbidity of massive proportion since the mid-1960s, with this owing as much to community modification of lifestyle, as to complex, dazzling, and frequently highly expensive medical and surgical interventions. Where descriptive analytical work has looked back over the change in CVD rates, about 50 per cent on average (perhaps less lately) settles on actions that the populations have taken to reduce their exposure to risk factors. The other half can be credited to improved care (Vartiainen *et al.* 2000).

Encouragingly, if implemented, the positive impact of prevention and early treatment would manifest mostly in younger adults in their economically productive years, thereby mitigating the macro- and micro-economic implications of CVD already mentioned (Leeder *et al.* 2004). Visible results in the relatively short term, such as stroke reduction in treated hypertensives or diminished pneumonia admissions in reformed smokers, would be necessary to sustain investment in prevention programmes by non-health bureaucracies. But, as argued above, prevention programmes must be locally sustainable for an indefinite future, pending environmental change that reduces or eliminates risk. For this reason, developing countries must be encouraged to take the first step themselves, now, as a prelude to recruiting assistance from elsewhere, and as a reflection of genuine concern among the members of their communities.

### **Taking action on chronic diseases**

The link between environmental changes associated with economic growth, urbanisation, and improvements in personal financial status, and the evolution of chronic disease that has been observed in many nations, ladders the poor with the highest CVD risk profiles today. The social determinants of health, the conditions in which people are born, grow, live, work, and age, including the health system, are shaped by the distribution of power, resources, money, and policy at all levels – global, national, and local. The social determinants of health are mostly responsible for health inequities – the unfair and avoidable differences in health status seen within and between countries. They contextualise the origin of the disease, and make it less likely that the affected individuals will have the efficacy and money to seek treatment and change their lifestyles. Chronic disease is one of the biggest land masses on the map of inequality and inequity today.

#### *Cultural and critical barriers to chronic disease management*

In order to deal effectively with chronic diseases, the context in which they are addressed is extraordinarily important. On one level, the goal is quite straightforward. If one simply tells the patient (and also the seemingly disease-free population) to eat well and wisely, stop smoking, exercise, and maintain a normal weight, the chronic diseases that have become scourges of the modern age would almost disappear. The problem would be solved. As we all know, though, that advice is simple to give and accurate, but its implementation is extraordinarily difficult in any society and in any social strata, although more so for those in lower socio-economic classes for whom healthy and affordable foods, and safe neighbourhoods in which to exercise, may not be accessible.

Let us look at several examples of this complexity. First, take the need to swallow pills every day for an asymptomatic disease, such as when a person is found to have elevated blood pressure

or cholesterol. In the United States and other high-income countries, this has been done for 60 years for hypertension and other conditions. This approach gained enormous publicity after the death of former president, Franklin Roosevelt, in the 1940s from high blood pressure. Yet, in spite of this robust history and widespread publicity, only 30 per cent of hypertensive patients in the US and other high-income countries today achieve the therapeutic goal of normal blood pressure. Nonetheless, because the response curve is continuous, this graded outcome has had a profound impact on CVD endpoints, with strokes falling by more than 75 per cent since 1940, and heart disease by more than 56 per cent from 1965 at its peak, until 2000 (CDC 1999).

If we then take the need for chronic disease management, and think about applying it to the nomadic herdsmen on the Mongolian steppes, to the favelas of Rio de Janeiro, or to the new urban areas of Mumbai, the magnitude of the response required is obviously amplified and the barrier seems even more formidable.

The second example comes from the political arena. The world is awash in empty, high-calorie, high-salt-containing fast foods. These foods are adored by billions, consumed in large amounts, and play an important role in the obesity, hypertensive, and diabetes epidemics currently in progress. These foods are available for several reasons. Most countries offer a variety of agricultural subsidies that are deeply embedded in the political and entrepreneurial fabric of the country. They are also supported by global trade agreements, the most obvious of which are the World Trade Organization (WTO) agreements, negotiated and signed by the bulk of the world's trading nations and ratified in their parliaments. However, there are also many other smaller bilateral treaty obligations based in agriculture. Changing this political reality is extraordinarily difficult, if not impossible.

While the World Health Organization (WHO), as a representative and protector of global public health interests, has observership status at WTO meetings, there is no obligation on the part of the negotiators at WTO meetings to pay any heed to the WHO. Since the WTO meetings go on for months, and are often in remote parts of the world, the expense is great for the WHO to maintain observers. Hence, there is virtually no input from the public health arena to the WTO. At some point, if we are to confront the mentioned global epidemics, this dynamic has to change.

The third example of the complexity of CVD control in particular comes from the fast food revolution that is supported by robust advertising campaigns. The retail companies that market these foods are extremely successful, enjoy the backing of the financial community, are supported enthusiastically by their customers, and have very little incentive to change a successful formula. There have, however, been some dents made in this armour.

In the United States, the main purveyors of soft drinks were persuaded to take sweetened drinks out of vending machine in schools (Burros and Warner 2006). They did this and deservedly got credit for doing it, but it is telling to examine the background to that decision.

A large effort has been directed by schools, parents, and non-governmental organisations to inhibit the abusive marketing and sales of energy-dense, low-nutrient foods. The food companies, given their acutely tuned political antennae, recognised this shift in public opinion, and broadened their portfolios to include juice and water companies. When the companies were finally ready to change, they simply altered the mix of drinks that they put in the vending machine. This, then, was a win-win operation; schools now have an environment with more healthy foods, and the companies have the capacity to continue marketing to a group that spends a great deal on what it drinks.



*Essential strategies for prevention and management of chronic disease*

Chronic disease management (and indeed prevention) requires continuity, trust, access, and supplies. The environment in which this kind of health care delivery system can thrive requires a civil society that is active on its own behalf in seeking support for such services. In wartime, prevention and management of chronic disease is not a priority and probably will not be done, during periods of social upheaval it cannot be done, and in an environment where the population has reason to dread its own government it will not happen unless somehow it can be seen as a movement independent of government. For effective prevention and management to occur, citizens must interact with the health care system, be open about their issues and problems, and have access to, and know that the personnel and supplies required for ongoing care are going to be there (Raymond *et al.* 2004).

If these social conditions exist, then action can follow. First, the Ministry of Health in a country needs, through mechanisms such as social marketing and education, to create a receptive environment for implementing the required changes, especially if chronic disease and their treatment and prevention are unknown entities to the local culture. Embarking on a new treatment programme for a chronic disease within a country's health system, and its clinical risk precursors in which medicines are offered for both symptomatic and asymptomatic disease, requires an informed population. A detailed publicity campaign, with structured public relations programmes and advocacy pronouncements by leading public figures, as well as health leadership, could be used to good effect to launch such a programme. This is not an easy sell and will require both health care delivery and public health leadership to collaborate and cooperate for common goals, and there may be a long lag time while such a programme is inaugurated before actual implementation occurs.

The second necessary strategic step is that the government agencies beyond those specifically devoted to health need to buy into this programme. This was argued persuasively by the WHO Macroeconomic Commission on Health (WHO 2001). All government ministries need to acknowledge that health is a part of its portfolio; that they must give health more than token attention; and that they must incorporate health issues into their policies, particularly those policies that relate to the food supply, the physical environment, and tobacco, all of which impinge on health. The broad government writ large needs to understand that it is important to have healthy workers, healthy soldiers, and healthy retirees. Without those, running a government becomes difficult, expensive, and politically risky in today's volatile world.

The third strategy relates to very new technologies. Remote medical monitoring offers the opportunity for patients with chronic disease to be followed where they live (Coye *et al.* 2009). Patients with hypertension, congestive heart failure, diabetes, asthma, and obesity can be followed from afar by mobile communication technology (Vital Wave Consulting 2009). For example, if mobile phones are used, patients can weigh themselves, document what they have been eating, confirm they have taken pills, even check their blood pressure or blood sugar – having been taught in the clinic – and report this in to the medical centre by phone. When they do this, they can be given extra telephone subscription minutes for that month or for that week. This saves the patient the need to make long trips, giving up work, and spending money to get to the clinic simply to have their blood pressure or blood sugar checked. The implementation of this technology is in its infancy but has great promise for the developing world, especially given the high levels of mobile phone ownership throughout Africa, India, and China, for example.

These strategies and no doubt others all need to be blended together to make a chronic disease prevention programme work. Clearly, the effort has to be broad-based throughout the

government and society. It will require the input and cooperation of the corporate world, the national and international trading communities, military, labour and management, and the educational communities.

All relevant actors do not have to begin at a level of 100 per cent effort simultaneously, but ultimately, each of these groups and agencies will need to be engaged. The initiating leadership, whether the health advice comes from afar or from within their country or ministries, needs to recognise that this is a long-term strategy that needs to be built piece by piece, engaging the support and cooperation of multiple players.

### *Engaging the private sector, civil society and international organisations*

Effective chronic disease prevention cannot be simply a matter of public health policy. Risk factors are embedded in all manner of social and economic structures and institutions. To implement policy effectively requires coalitions among a variety of institutions and interests of which public health will be one, and only one, part. Who else must be part of that coalition? The list is long. Employers, because the CVD threat occurs in the workforce, and reaching that workforce at work is most efficient; civil society organisations, because public communication and policy advocacy rests within their sphere of influence; educators, because risk behaviour is learned and needs to be un-learned; central banks, because investments in health infrastructure will be required; food companies, because nutrition inputs are critical to consumer food behaviour; and communications companies, because messaging about behaviour change is fraught with difficulty. To achieve this outcome, two changes of heart in public health are essential.

First, public health must see itself as one of many sectors needing to be mobilised. Only appreciating the need for coalitions, however, will be insufficient.

Second, related to the above, public health must see these other participants as its equal if policy is to be crafted and enthusiastically executed. Many seats at the coalition table must be filled, and they must be filled willingly and actively. Public health must see its peers in business, commerce, finance, communications, and the like, not as followers who are present to do the will of public health, but as leaders whose own interests must be accommodated in a jointly perceived priority. Effective coalitions are comprised of multiple gears that turn on their own separate axes for their own self-interest, but mesh to move a policy forward. It is the separateness that makes the movement possible.

This is by far the most difficult challenge for global public health. It cannot dominate chronic disease control strategy because the risk factors, behaviours, and institutional pathways are not within its grasp or power. Building coalitions of the willing and relevant is the way forward.

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'A truly multidisciplinary approach to public health and global health makes this book special.' – *Peter Piot, Professor of Global Health and Director of the London School of Hygiene and Tropical Medicine, UK, and former Executive Director of UNAIDS, and Under Secretary-General of the United Nations*

At the beginning of the twenty-first century, key public health issues and challenges have taken centre stage. They range from arsenic in drinking water to asthma among children and adults; from the re-emergence of cholera, to increasing cancer rates and other chronic diseases; from AIDS to malaria and hepatitis; from the crises faced by displaced or refugee populations to the new challenges that have emerged for reproductive health and rights.

Like most aspects of contemporary life, these problems have been impacted by globalization. The issues that confront us are being shaped by evolving processes such as the growth of inequalities between the rich and the poor in countries around the world, the globalization of trade and commerce, new patterns of travel and migration, as well as a reduction in resources for the development and sustainability of public health infrastructures.

The *Routledge Handbook of Global Public Health* explores this context and addresses both the emerging issues and conceptualizations of the notion of global health, along with expanding upon and highlighting the critical priorities in this rapidly evolving field. It will be organized in ten main sections. The topics covered include:

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