

Hypertension: a silent contributor to the global cardiovascular epidemic

Shanthi Mendisⁱ

Abstract

Globally, cardiovascular disease accounts for nearly one third of the total global deaths. Hypertension is responsible for at least 45% of deaths due to heart disease, and 51% of deaths due to stroke. Currently, 80% of deaths due to cardiovascular disease occur in low- and middle-income countries, where the burden of hypertension has increased over the past decade due to population growth, ageing and increase in behavioural risk factors. If appropriate action is not taken, deaths due to cardiovascular disease are projected to rise further. The cost of inaction may be very high. In low- and middle-income countries, many people do not seek treatment for early stage hypertension because it is unaffordable. Households then spend a substantial share of their income on hospitalization and care of complications of hypertension, and may be driven to poverty. The annual loss of approximately US\$ 500 billion due to major noncommunicable diseases amounts to approximately 4% of gross domestic product for low- and middle-income countries. Cardiovascular disease accounts for nearly half this cost. On the other hand, there are significant health and economic gains attached to early detection, adequate treatment and good control of hypertension. These approaches can significantly reduce the need for costly interventions such as cardiac bypass surgery and dialysis. The estimated cost of scaling up highly cost-effective interventions that address major noncommunicable diseases in all low- and middle-income countries is less than US\$ 1 per head in low-income countries, less than US\$ 1.50 per head in lower-middle-income countries and US\$ 2.50 in upper-middle-income countries. Although such cost-effective interventions are available, there are major gaps in implementation, particularly in resource-constrained settings. Public health policy must address hypertension because it is a major cause of disease burden. A combination of affordable, sustainable and effective interventions targeted at the whole population through multisectoral actions and partnerships is needed to address the implementation gap. Salt reduction initiatives can also make a major contribution to the prevention and control of high blood pressure by shifting the blood pressure distribution of the whole population to a healthy level. Health systems need to be strengthened to deliver cost-effective integrated programmes, particularly at the primary care level, and use hypertension and diabetes as entry points. The prevention and control of hypertension requires political will on the part of governments and policy-makers. The World Health Organization is coordinating the development of a global action plan for the prevention and control of noncommunicable diseases for the period 2013–2020 and a global monitoring framework. Together, they will provide a road map to operationalize the commitments of the United Nations Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases.

Prevention of heart attack and stroke; hypertension as an entry point

Globally, cardiovascular disease accounts for approximately 17 million deaths a year, nearly one third of the total global deaths.¹ Of these, complications of hypertension account for 9.4 million deaths worldwide every year.² Hypertension is responsible for at least 45% of deaths due to heart disease, and 51% of deaths due to stroke. Recognizing the public health importance of reducing the

ⁱ Director a.i., Department of Management of Noncommunicable Diseases, World Health Organization, Geneva, Switzerland

global burden of heart disease and stroke, the World Health Organization (WHO) has decided that hypertension will be the focus of the World Health Day on 7 April 2013. The theme will be "Prevention and control of heart attacks and strokes through a focus on hypertension".

Hypertension and cardiovascular disease disproportionately affect populations in low- and middle-income countries where health systems are weak. Currently, 80% of deaths due to cardiovascular disease occur in low- and middle-income countries, which can least afford the social and economic consequences of ill health.^{1,3,4} The probability of dying from a noncommunicable disease such as cardiovascular disease between the ages of 30 and 70 years is highest in sub-Saharan Africa, eastern Europe and parts of Asia.

In 2008, worldwide, approximately 40% of adults aged 25 years and above had been diagnosed with hypertension. The number of people with the condition rose from 600 million in 1980 to 1 billion in 2008.³ In high-income countries, the prevalence of hypertension has declined due to strong public health policies and widely available diagnosis and treatment. However, in low- and middle-income countries, the disease burden of hypertension has increased over the past decade.

Causes and consequences of hypertension

The increase in the number of people affected by hypertension is attributed to population growth, ageing and the presence of behavioural risk factors such as unhealthy diet, harmful use of alcohol, lack of physical activity, excess weight and exposure to persistent stress. A small percentage of people with hypertension have a secondary cause such as kidney or endocrine disease.

The adverse health consequences of hypertension are compounded because many people affected also have other health risk factors that increase the odds of heart attack, stroke and kidney failure. These risk factors include tobacco use, obesity, high serum cholesterol and diabetes mellitus. Tobacco use worsens the risk of complications among those with hypertension. In 2008, 1 billion people were smokers and the global prevalence of obesity had nearly doubled since 1980. The global prevalence of high cholesterol was 40% and that of diabetes was 10% in adults above 25 years of age.³ Tobacco use, unhealthy diet, harmful use of alcohol and physical inactivity are also the main behavioural risk factors of all major noncommunicable diseases, i.e. cardiovascular disease, diabetes, chronic respiratory disease and cancer.⁵⁻⁹

If appropriate action is not taken, deaths due to cardiovascular disease are projected to rise further. The increasing incidence of noncommunicable diseases including cardiovascular disease will lead to mounting costs of care for patients and their families, unless public health efforts to prevent these conditions are intensified. The Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases, adopted by the United Nations General Assembly in September 2011, acknowledges the rapidly growing burden of noncommunicable diseases and its devastating impact on health, socioeconomic development and poverty alleviation. The Political Declaration commits governments to a series of concrete actions.⁷

Cost of inaction

Premature death, disability, personal and family disruption, loss of income and health-care expenditure due to hypertension take a toll on families, communities and national finances. In low- and middle-income countries, many people do not seek treatment for early stage hypertension because it is prohibitively expensive. Households often then spend a substantial share of their

income on hospitalization and care of complications of hypertension, including heart attack, stroke and kidney failure. Families face catastrophic health expenditure when heart attack, stroke and dialysis require hospital care, entrenching people in poverty.¹⁰ Over the period 2011–2025, the cumulative lost output in low- and middle-income countries associated with noncommunicable diseases is projected to be US\$ 7.28 trillion.¹¹ The annual loss of approximately US\$ 500 billion due to major noncommunicable diseases amounts to approximately 4% of gross domestic product for low- and middle-income countries. Cardiovascular disease including hypertension accounts for nearly half the cost.¹²

Cost of action

There are significant health and economic gains attached to early detection, adequate treatment and good control of hypertension. These approaches can significantly reduce the need for costly interventions such as cardiac bypass surgery and dialysis, which are currently draining individual and government budgets.

The cumulative cost of scaling up highly cost-effective interventions that address major noncommunicable diseases including cardiovascular disease in all low- and middle-income countries is estimated to be US\$ 9.4 billion a year.¹³ The estimated individual cost is less than US\$ 1 per head in low-income countries, less than US\$ 1.50 per head in lower–middle-income countries and US\$ 2.50 in upper–middle-income countries. Expressed as a proportion of current health spending, the cost of implementing such a package amounts to 4% in low-income countries, 2% in lower–middle-income countries and less than 1% in upper–middle-income countries.¹³

Addressing implementation gaps through cost-effective approaches

Hypertension rarely causes symptoms until the blood pressure levels are very high; this is why many people go undiagnosed. Those who are diagnosed may not have access to treatment and may not be able to successfully control their illness over the long term. Although cost-effective interventions are available for addressing hypertension, there are major gaps in implementation, particularly in resource-constrained settings.

A combination of interventions targeted at the whole population and specifically at high-risk groups is needed to address the implementation gap. Strengthening populationwide approaches to reduce behavioural risk factors, e.g. unhealthy diet, harmful use of alcohol and physical inactivity, can prevent hypertension. Reducing tobacco use would decrease the risk of complications of hypertension. Salt reduction initiatives can also make a major contribution to the prevention and control of high blood pressure.

Vertical programmes focusing on the treatment of hypertension or diabetes alone are not cost effective. Strengthening health systems to deliver cost-effective integrated programmes, particularly at the primary care level, will facilitate treatment of people at high risk for complications in an affordable manner. Such programmes need to use hypertension and diabetes as entry points so that the total cardiovascular risk can be assessed and addressed.¹⁴

Tools such as the WHO/International Society of Hypertension (ISH) risk prediction charts¹⁵ have been designed to aid cardiovascular risk assessment. Evidence-based guidance is also available on the management of patients with hypertension through integrated programmes, even in resource-constrained settings.¹⁶ WHO tools provide evidence-based guidance on the appropriate use of medicines, so that unnecessary costs related to drug therapy can be avoided and the sustainability

of programmes ensured. Not all patients diagnosed with hypertension require medication, but those at medium-to-high risk will need one or more of eight essential medicines to lower their cardiovascular risk (a thiazide diuretic, an angiotensin-converting enzyme inhibitor, a long-acting calcium-channel blocker, a beta-blocker, metformin, insulin, a statin and aspirin). At least 30 low- and middle-income countries are now using these tools to address hypertension in an affordable and sustainable manner.

Coherent public health policies, multisectoral and multistakeholder efforts

The prevention and control of hypertension requires political will on the part of governments and policy-makers. Health workers, the academic research community, civil society, the private sector, and families and individuals all have a role to play. Only concerted effort can harness the technologies and treatment options available to prevent and control hypertension and thereby delay or prevent its life-threatening complications.

Public health policy must address hypertension because it is a major cause of disease burden. Interventions must be affordable, sustainable and effective. As such, vertical programmes that focus solely on hypertension are not recommended. Hypertension should be tackled through a programme that addresses total cardiovascular risk and should be an integral part of the national strategy for prevention and control of noncommunicable diseases.

There are six important components that need attention in planning country initiatives to address hypertension. They include:

- an integrated primary care programme
- the cost of implementing the programme
- availability and affordability of basic diagnostics and medicines
- reduction of risk factors in the population
- workplace-based wellness programmes
- monitoring of progress.

Integrated programmes must be established at the primary care level to address hypertension while advancing the universal health coverage agenda. Drug treatment should be targeted particularly at people who are at medium or high risk of developing heart attack, stroke and kidney damage. For this to happen, patients presenting with hypertension should have a cardiovascular risk assessment, including tests for diabetes mellitus and other risk factors. Hypertension and diabetes are closely linked risk factors, and one cannot be properly managed without attention to the other. The objective of an integrated programme is to reduce total cardiovascular risk to prevent heart attack, stroke, kidney failure and other complications of diabetes and hypertension. Adopting a total cardiovascular risk approach ensures that drug treatment is provided to those at medium and high risk. It also prevents unnecessary drug treatment of people with borderline hypertension and low cardiovascular risk. Unnecessary drug treatment exposes people to unwarranted risks and increases the costs of health care. Both need to be avoided.

A cost-effective programme must also include populationwide approaches to shift the blood pressure distribution of the whole population to a healthy level. Populationwide approaches to reduce high blood pressure are similar to those that address other major noncommunicable diseases. These require public policies to reduce the exposure of the whole population to risk factors

such as unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol and include school health and workplace-based wellness programmes.^{8,9}

Reducing population salt intake requires multisectoral collaboration between the government, the food industry, nongovernmental organizations (NGOs), health professionals and the public.^{8,9} A modest reduction in salt intake can be achieved by voluntary reduction or by regulating the salt content of prepackaged foods and condiments. The food industry can make a major contribution to population health if a gradual and sustained decrease is achieved in the amount of salt that is added to prepackaged foods. In addition, sustained mass media campaigns are required to encourage reduction in salt consumption in households and communities.

Skilled and trained health workers at all levels of care are essential for the success of hypertension control programmes. Training of health workers should be institutionalized within medical, nursing and allied health worker curricula. The majority of cases of hypertension can be managed effectively at the primary health-care level. Primary health-care physicians as well as trained non-physician health workers can play a very important role in detecting and managing hypertension.¹⁷

Civil society institutions, in particular NGOs, academia and professional associations, have a major part to play in addressing hypertension and in the overall prevention and control of noncommunicable diseases at both country and global levels. At present, WHO, in consultation with Member States and other partners, is coordinating the development of a global action plan for the prevention and control of noncommunicable diseases for the period 2013–2020⁸ and a global monitoring framework. Together, they will provide a road map to operationalize the commitments of the UN Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases⁷ and to continue the work of the *Global strategy for prevention and control of noncommunicable diseases*, including hypertension.⁹

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