

STATUS REPORT

Hypertension as a Public Health Problem in India

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ABSTRACT

Hypertension is the most important risk factor for global morbidity and mortality. It has assumed epidemic proportions in India with an estimated 100 million patients. In recent decades, the disease is increasing more rapidly in rural than in urban population. Status of hypertension treatment and control is dismal in India with about a third of patients on treatment and only 20% controlled. Innovative system-based strategies using a combination of public health approaches and physician led clinic-based management are required to prevent premature cardiovascular disease burden due to hypertension.

Keywords: Cardiovascular disease, Hypertension epidemiology, Public health approach, Risk factors.

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INTRODUCTION

Once a disease reaches certain threshold prevalence (typically >5%), it attains public health importance. Hypertension perfectly fits the bill and has been called endemic, epidemic, and a pandemic.¹ Hypertension and other noncommunicable diseases in India have, for long, been neglected diseases and focus of public health has been on communicable diseases and maternal and childhood health.² Noncommunicable diseases, such as cardiovascular diseases, cancers, chronic obstructive pulmonary diseases and mental ill-health, are now the greatest burden on humankind and account from 60 to 70% of global deaths, years of life lost (YLLs) and years lived with disability (YLDs).³ In India about 50% deaths and disease burden is due to these conditions.³ Hypertension is the most important risk factor for global burden of disease and disability.^{4,5} In India, it is the third most common cause of YLLs and YLDs.⁴

It has, however, not been accorded the importance it deserves and public health curriculum at medical schools and public health strategies to prevent and control this condition are woefully lacking.² Public health measures such as policy changes and population wide interventions supplemented with individual risk-based treatment has changed the hypertension scenario in developed countries. These measures have led to marked decrease (50–100%) in mortality from stroke and coronary heart disease in these countries in the last 50 years.⁶ We argue that hypertension is an important public health problem in India, has already attained epidemic proportions, and leads to high mortality burden, especially in rural population of the country where it is rapidly increasing.⁷

BURDEN OF HYPERTENSION IN INDIA

World Health Organization (WHO) has reported that hypertension is more prevalent in low and lower-middle income countries than high and middle-income countries.⁵ The prevalence is the highest in countries of Africa (Sub-Saharan and Central) and Asia (South, South-East, Eastern and Central). Global burden of diseases study reported that in the year 1990 there were 350 million persons with hypertension globally, this increased to about 500 million in the year 2005 and poised to increase to about one billion in 2025.⁶ The latest iteration of global burden of diseases has reported that while prevalence of hypertension has stabilized in high and middle-income countries, it continues to increase in low and lower-middle income countries such as India.⁸

We previously reviewed 50-year trends in prevalence of hypertension in India and reported escalating burden of this condition from the 1950s to 1990s in both urban and rural regions.⁹ In the mid-1950s and early 1960s, population-based epidemiological studies among urban subjects used older WHO criteria for diagnosis (known hypertension or BP >160 mm Hg systolic and/or 95 mm Hg diastolic) and reported hypertension prevalence of 1.2 to 4.0%. Since then, prevalence of hypertension has been studied in many Indian cities and it has been reported that there has been a steady increase in its prevalence from 3.0 to 4.5% in early 1960s to 11.0 to 15.5% in mid-1990s.⁹ Studies in 1950s to 1970s reported lower prevalence of hypertension in rural population in India. However, there has been a significant increase of hypertension in these population as well, from less than 1% in early

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1960s to 5 to 7% in late 1990s. Trend analyses showed that over this 50-year period (1945–1995) there was a much steeper increase in prevalence of hypertension in urban population ($R^2 = 0.47$) than in the rural population ($R^2 = 0.21$). It has been reported that at the turn of the century hypertension prevalence in India was much more in urban as compared to rural population.¹⁰ Recent reviews in urban and rural populations of India have reported persistent urban-rural gradient.^{11,12} It is observed that more than one-third of adult urban subjects and a quarter of rural adults have hypertension in India.^{11,12} Trend analysis reveals that in the last 20 years (1995–2015) there has been a convergence of hypertension prevalence in urban and rural populations.⁷ While the prevalence of hypertension has remained stable at 28 to 33% among Indian urban subjects ($R^2 = 0.08$), in rural subjects, it has increased significantly from 10 to 12% at turn of the century to 24 to 27% at present ($R^2 = 0.04$).⁷

In India, an estimate regarding the absolute numbers of patients with hypertension that would be eligible for lifestyle or pharmacological therapies can be extrapolated from recent epidemiological studies.⁷ Current studies have shown that hypertension is present in 25 to 30% urban and 15 to 20% rural adults. Because of a difference in the number of BP measurements (typically 1–2 in epidemiological studies and 3 to 5 over a longer time-

period in clinical studies), it has been estimated that epidemiological studies over-estimate hypertension by 15 to 20%.¹³ If we discount this proportion, currently 20% adults in the urban and 15% in the rural areas of India would be diagnosed with hypertension. Translating these proportions into numbers reveals a massive burden of this disease in India. According to the 2011 Indian census, there are 700 million adults aged >18 years (of the total 1.21 billion) in the country, of these 250 million are in urban and 450 million in rural areas. Therefore, absolute number of hypertensive in India would therefore be 50 to 55 million among urban and 45 to 50 million in rural areas. This translates into a total of 95 to 105 million adults in India with hypertension.

POLICY AND PUBLIC HEALTH IMPLICATIONS

High absolute number of hypertensive subjects in both urban and rural Indian subjects presages an epidemic of cardiovascular diseases with devastating consequences. For example, a high incidence of stroke in Indian rural populations has been reported in recent studies.¹⁴ Hypertension is the most important stroke risk factor in India.¹⁵ Prospective urban rural epidemiology (PURE) study has reported greater cardiovascular mortality among rural compared to urban subjects in low-income countries (mainly India) despite lower risk factor

Table 1: Public health measures for better hypertension treatment and control in India
(Source: Adapted from reference 18)

Strategy	Examples
Public education	<ul style="list-style-type: none"> Hypertension is a major cardiovascular risk factor and one of the most important cause of strokes and heart disease Hypertension is most often silent so regular BP checks are essential in all adults (>35 years) Hypertension can be prevented and better controlled by adoption of prudent lifestyle combined with simple, safe and inexpensive drugs
Physician education	<ul style="list-style-type: none"> Greater focus on noncommunicable diseases during undergraduate education. Focus on hypertension in public health curriculum Hypertension as a primary care issue. Knowledge of proper management and long-term care. Physician inertia to be managed Importance of home monitoring, ambulatory BP measurement, combination therapy and focus on vascular risk management
Opportunistic screening	<ul style="list-style-type: none"> Screening for hypertension among all adults by physicians or other healthcare workers at every encounter at all levels of care (universal opportunistic screening) Measurement of BP in adults once a year by trained nonphysician healthcare workers during home visits in rural and urban areas
Lifestyle changes	<ul style="list-style-type: none"> Focus on reducing high salt in diet, reducing alcohol consumption, weight reduction, and greater physical activity. Smoking/tobacco use cessation for overall risk reduction.
Low-dose combination pharmacotherapy	<ul style="list-style-type: none"> Use of low doses of two or more individual drug combination as initial therapy Use of evidence-based combinations
Control of vascular risk factors	<ul style="list-style-type: none"> Focus on management of all vascular risk factors—smoking, high cholesterol, other lipids, diabetes in every hypertensive Polypharmacy approach in high-risk persons
Patient empowerment	<ul style="list-style-type: none"> Lifelong commitment to lifestyle changes and antihypertensive therapy in patients with hypertension BP self-monitoring



burden.¹⁶ This is associated with low awareness, treatment and control status of hypertension in the country.¹⁷

Awareness status of hypertension has increased in the last 30 years in India but remains very low, especially in rural population.¹² Hypertension awareness, treatment and control has increased from less than 30% in urban and less than 10% in rural areas in 1980s to 60% in urban and 40% in rural areas presently. However, control status remain less than 30% in urban and 20% in rural areas.^{12,17} There is, therefore, a need for policy interventions to prevent onset of cardiovascular risk factors and facilitate cardiovascular primary prevention using standard public health approaches.²

These interventions include policy-level, health system-level, population-level and clinic based individual-level interventions (Table 1).¹⁸ Policy and system level interventions should be focused on public education and screening, while population level interventions should focus on reduced intake of salt and alcohol, smoking cessation, promotion of healthy diet and facilitation of physical activity. Individual level interventions should be on better physician education who promotes individual lifestyle changes, appropriate pharmacotherapy and control of vascular risk factors along with efforts to promote adherence.

CONCLUSION

Hypertension is an important public health problem in India. Hypertension detection, awareness and its control are poor. Improved detection and management can prevent hundreds of thousands of premature deaths and avoid a similar number of strokes and heart attacks every year.¹⁹ Innovative system-based strategies to better manage hypertension outlined above (Table 1) are required. A combined approach to lowering risk with lifestyle changes and combined use of antihypertensive and lipid lowering therapy can reduce the cardiovascular risk by as much as 75%. We need improved systems of healthcare for widespread screening for hypertension so that it can be detected. Once detected, effective BP control and reduced CVD risk is best achieved by appropriate pharmacotherapy with good adherence. Such a public health approach shall lead to enormous changes in clinical outcomes of hypertension in India.

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