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Editorial

“All hands on deck”: An imperative for tackling hypertension in South Asia



Hypertension is a major cause of morbidity and mortality and a leading risk factor for cardiovascular and chronic kidney disease, worldwide. Globally, over the last 4 decades, the number of adults living with high blood pressure increased from 594 million back in 1975 to 1.13 billion in 2015 with the increase seen mostly in low-middle income countries.¹ In 2001, raised blood pressure (≥ 115 mmHg systolic) was associated with 7.6 million premature deaths worldwide and resulted in a loss of 92 million disability-adjusted life-years.² Raised blood pressure accounts for 45% of all heart disease related deaths and approximately, 51% of all stroke-related deaths worldwide.³

A large proportion of the disease burden is attributed to resource limited low-middle income countries, especially the South Asia region. Though accurate estimates regarding prevalence and incidence are lacking due to a dearth of large scale, well-conducted epidemiologic studies while government led nation-wide surveillance initiatives of non-communicable diseases are limited due to self-reported surveys. Lack of an accurate estimate of the prevalence and incidence of hypertension in these settings poses a serious impediment to planning, resource allocation and development of population level interventions for risk reduction.⁴

H. James Harrington notes, “*Measurement is the first step that leads to control and eventually to improvement. If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it.*”

In this issue of the Indian Heart Journal, the investigation by Prabhakaran fills this knowledge gap.⁵ Prabhakaran and colleagues measured the prevalence and incidence of hypertension in the Center for Cardio-metabolic Risk Reduction in South Asia (CARRS) Surveillance Study cohort. CARRS was a low cost, culturally appropriate, methodologically relevant model surveillance system developed and conducted over a 4-year period across 3 large metropolitan cities in India and Pakistan.⁵ The population size and diverse composition of the chosen study sites, Karachi, Chennai and Delhi, made them “archetypes of rapid socio-economic, demographic, epidemiologic, and nutrition/lifestyle transitions in the South-Asian region” and thus ideal settings to examine the growing burden of cardio-metabolic diseases, especially hypertension.

The present study highlights some eye opening statistics that are cause for great concern. Of a total of 16, 287 participants aged

≥ 20 years, the age adjusted total burden of hypertension stood at a staggering 30% in men and 27% in women at baseline; these rates are comparable to the prevalence of hypertension in the United States of 34% in men and 33% for women.⁶ The rates of awareness and control were markedly different for men and women. Overall, women had higher levels of awareness and control. There were significant differences in these parameters across cities. The age-adjusted prevalence of hypertension was highest in Delhi (37%) as was the prevalence of hypertension in young adults. While prevalence levels were lower (24%), the awareness and treatment levels were higher in Karachi compared with other sites. The incidence of hypertension increased with age and was high with 1 in 6 adults developing hypertension over the two-year period.

Significant treatment gaps are identified in these data: over all, the treatment (22% for men; 42% for women) and control (9.5% for men and 21% for women) levels for hypertensive subjects were far from ideal. This is in stark contrast to the rates of treatment (60% for men; 71% for women) and control (40% for men; 50% for women) among hypertensive Asians living in the United States.⁶ Even among those with high-risk conditions such as diabetes, CKD, CVD, or stroke, control of hypertension was achieved in $<40\%$. Compared to Asians living in the United States whose awareness of high blood pressure is 70–80%,⁶ rates of awareness in the CARRS cohort were $<40\%$ across cities and both sexes except for women in Karachi who had rates of awareness reaching 57%.

Indeed, these data are sobering for the densely populated, resource restricted countries where 50% of the population is still under 25 years of age, indicating that the full effect of the NCD epidemic has not yet been realized. Prabhakaran's work provides the measurement impetus required for swift and sustained action to curb this evolving epidemic. In order to realize the World Health Organization Global Action Plan for the Prevention and Control of Non-Communicable Diseases goal of a 25% relative reduction in the prevalence of raised blood pressure by 2025; concerted, scalable, multi-prolonged, cross-country interventions are required.⁷ The modifiable risk factors for hypertension development identified in this study, namely pre-hypertension, overweight, dysglycemia, and alcohol use, serve as important targets for intervention. Cost effective approaches for hypertension prevention, screening, education and management, that are also culturally appropriate and feed into the micro-economy of the community, such as community health workers, have been used effectively both in

India and Pakistan. Implementing such models on a wider scale is likely to offer the best chance at achieving the WHO hypertension reduction goals.⁸ Implementation of strategies outlined in the World Heart Federation's road map on prevention and management of hypertension⁹ should aid in effective implementation of guideline-directed hypertension therapy as well as early identification of patients with hypertension. Some of these strategies include the use of opportunistic screening to improve hypertension detection, effective treatment of hypertension with low-cost generic medications, use of combination therapy for hypertension when indicated, treatment of other related cardiovascular disease risk factors especially tobacco use and cholesterol in patients with hypertension, and concomitant efforts to improve patients' medication adherence are important. In parallel, strengthening of the existing health care systems to deliver effective care for hypertensive patients including universal health coverage and provision of free/price-reduced essential medications and task sharing using community health workers are needed. Besides the usual vendors for public health education, newer innovative methods should be explored; high rates of mobile device use in both India and Pakistan, should allow the examination of the feasibility and effectiveness of large-scale mhealth educational interventions.¹⁰

CARRS served as a model program that should inspire similar programs for surveillance across the region and across both urban and rural landscapes. Further development, refinement and expansion of such systems is key to understanding the trajectory of change and success of on-going public health interventions. The long-term sustainability of such programs, however, requires enduring public-private partnerships, intersectoral collaboration of all the stake holders i.e. communities, academia, health care providers, industry, government, and continued engagement of the partnerships that organically developed across India/Pakistan, the South Asia region at large, and between both high and low-middle income countries. Indeed, it is an "all hands on deck" approach that is likely to succeed in managing this epidemic.

Relevant conflicts of interest

None

References

1. Collaboration NCDRF. Worldwide trends in blood pressure from 1975 to 2015: A pooled analysis of 1479 population-based measurement studies with 19.1 million participants. *Lancet*. 2017;389:37–55.
2. Lawes CM, Vander Hoorn S, Rodgers A. International society of H. global burden of blood-pressure-related disease, 2001. *Lancet*. 2008;371:1513–1518.

3. World Health Organization. A global brief on hypertension. *Silent Killer, Global Public Health Crisis*. [Available at: http://apps.who.int/iris/bitstream/10665/79059/1/WHO_DCO_WHD_2013.2_eng.pdf. Accessed June 21, 2017].
4. Nair M, Ali MK, Ajay VS, et al. Carrs surveillance study: design and methods to assess burdens from multiple perspectives. *BMC Publ Health*. 2012;12:701.
5. Prabhakaran D, Jeemon P, Ghosh S, et al. Prevalence and incidence of hypertension: results from a representative cohort of over 16000 adults in three cities of south asia. *Indian Heart J*. 2017;69:434–441.
6. Benjamin EJ, Blaha MJ, Chiuve SE, et al. American heart association statistics C, stroke statistics S: heart disease and stroke statistics-2017 update: a report from the American heart association. *Circulation*. 2017;135:e146–e603.
7. Misra A, Tandon N, Ebrahim S, et al. Diabetes, cardiovascular disease, and chronic kidney disease in south asia: current status and future directions. *BMJ*. 2017;357:j1420.
8. Jarvis JD, Kataria I, Murgor M, Mbau L. Community health workers: an underappreciated asset to tackle ncd. *Glob Heart*. 2016;11:455–457.
9. Adler AJ, Prabhakaran D, Bovet P, et al. Reducing cardiovascular mortality through prevention and management of raised blood pressure: a world heart federation roadmap. *Glob Heart*. 2015;10:111–122.
10. Rehman H, Kamal AK, Morris PB, Sayani S, Merchant AT, Virani SS. Mobile health (mhealth) technology for the management of hypertension and hyperlipidemia: slow start but loads of potential. *Curr Atheroscler Rep*. 2017;19:12.

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