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Kanaya, Alka M

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Invited Commentary

India's Call to Action—Prioritize Chronic Cardiovascular Disease

Alka M. Kanaya, MD

India is a country of 1.3 billion people, with 4-fold the population of the United States and one-third the size. India has 29 states and 7 territories, with the populations of many states exceeding those of large countries. There are more than 2000

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distinct ethnic groups in India who speak 415 languages, of which 23 are considered official languages that are spoken by more than a million native speakers. India also has one of the fastest growing economies in the world. Along with rapid globalization and technological transformations, however, have come health problems, such as obesity, hypertension, and type 2 diabetes.

In 2016, ischemic heart disease became the leading cause of disability-adjusted life-years in India.¹ Also, by 2016, all Indian states had undergone an epidemiological transition to having higher rates of noncommunicable diseases than communicable, maternal, neonatal, and nutritional diseases. Noncommunicable diseases account for 55% of the overall disease burden (communicable and related diseases, 33%; and injuries, 12%).¹ A burgeoning burden of chronic cardiovascular diseases accompanies the persistent scourges of infections and malnutrition. States in the north and south (Himachal Pradesh, Punjab, Tamil Nadu, Kerala, Goa) have the highest rates of ischemic heart disease. The recently published Indian state level of disease burden report² showed that across all states, chronic diseases are the leading cause of death, with heterogeneity in the pattern of disease. For example, stroke is widely prevalent in the northeast of the country, with a rural to urban gradient of hemorrhagic stroke.² In the south and west, ischemic heart disease predominates.² This epidemic of cardiovascular disease is largely propelled by tobacco use, a high burden of hypertension, and a high propensity for developing type 2 diabetes.

In this issue of *JAMA Internal Medicine*, Geldsetzer and colleagues³ report on the prevalence of diabetes and hypertension from 2 large household surveys in 27 Indian states from 2012 to 2014. The surveys, notably, have provided the first nationally representative data on these conditions. The age-standardized diabetes prevalence was 6.1% for women and 6.5% for men, and hypertension prevalence was 20.0% for women and 24.5% for men, with marked variation among states.³ Diabetes and hypertension prevalence was significantly higher in urban locations compared with rural areas, although the associations among wealth and educational attainment and disease were modest. In middle-age to older adults across all geographic settings and socioeconomic groups in the country, the prevalence of both diabetes and hypertension were disturbingly high.³

The authors acknowledge that the estimates for diabetes prevalence may be lower than those in prior subnational stud-

ies and those used by the International Diabetes Federation, NCD Risk Factor Collaboration (NCD-RisC), and Global Burden of Disease Project because of limitations in the method for defining diabetes were based only on a blood glucose measurement, and did not include a known diabetes diagnosis, treatment with diabetes medications, or oral glucose tolerance testing. Indeed, a recent population-based study⁴ from 14 states in India from 2012 to 2015 that ascertained diabetes more comprehensively by using oral glucose tolerance tests, a physician diagnosis, or diabetes medication use found a diabetes prevalence of 7.3% with a similar variation by states, and a higher prevalence in urban compared to rural areas and among lower socioeconomic groups. Another recent population-based study⁵ from 2 Indian cities (New Delhi and Chennai) and a Pakistani city (Karachi) from 2010 to 2011 reported a somewhat higher prevalence of hypertension with 26.8% in women and 30.1% in men, likely owing to an exclusively urban sample. Other studies in immigrant South Asian populations from the United Kingdom, Singapore, and United States have also highlighted the higher rates of diabetes and hypertension in South Asians compared with other race/ethnic groups, drawing inferences that westernization of lifestyles added to the burden of disease. Thus, in a recent study⁶ from a research team that I was a part of, it was surprising to find that the diabetes prevalence in Chennai, Tamil Nadu, was higher than in a community-based sample of Asian Indian immigrants in the United States. This unexpected result may underscore the dramatic shift in lifestyle that has occurred in India.

Studies suggest that the particular vulnerability of Indians to type 2 diabetes reflects genetic susceptibility with more pancreatic β -cell dysfunction and an adverse body fat deposition in ectopic fat depots leading to greater insulin resistance.⁷ In addition, Indians in native settings as well as immigrants to diaspora countries develop diabetes at an earlier age and have a more rapid transition from prediabetic states to diabetes.⁸ Consequently, intensive lifestyle interventions may be less effective in Indians⁹ compared with similar interventions in other racial/ethnic groups.

Given this high prevalence of hypertension and diabetes in middle-age to older adults all across India, public health approaches, as well as the provision of appropriate medical care, are important. India should apply approaches for chronic disease prevention that have been learned in high-income countries. These lessons include community and state-level policy interventions particularly for tobacco control, public and private partnerships to promote a healthy diet and physical activity, and a robust national disease surveillance system.

A major challenge in chronic disease prevention and treatment is India's fragmented health care system, which is a patchwork of poorly resourced public health care and a booming ur-

ban private sector. There is a wide gap in the quality of care among states and between rural and urban populations. Almost 70% of the population live in rural areas with little to no access to hospitals and clinics. In contrast, private-sector urban hospitals boast world-class tertiary care treatments, enticing medical tourism. In an effort to improve health status and quality in all sectors, the Indian Ministry of Health approved a new National Health Policy in 2017.¹⁰ This policy highlights goals for reduction in disease prevalence and incidence, mainly focusing on communicable diseases with less emphasis on reducing premature mortality from cardiovascular disease, cancer, diabetes, and chronic respiratory diseases. Although the policy includes important goals, effective implementation is needed to make even a dent in the

high burden of hypertension and diabetes. With an existing shortage of physicians and other health care workers and inadequate access, India should maximize the potential of technology-enabled task shifting and task sharing. In addition, essential medicines as defined by the World Health Organization should be made available for the treatment of non-communicable diseases.

Ultimately, universal health care with financial protection as pledged by Narendra Modi, the current prime minister, should advance India's effort to address the epidemic of chronic disease, but only if meaningfully implemented. In sum, the report by Geldsetzer and colleagues³ is not only a stark warning of the looming crisis of cardiovascular diseases in India, but can also serve as a call to action for the country.

ARTICLE INFORMATION

Author Affiliation: Department of Medicine, University of California, San Francisco, San Francisco.

Corresponding Author: Alka Kanaya, MD, Department of Medicine, University of California, San Francisco, 1545 Divisadero St, Ste 311, San Francisco, CA 94143-0320 (alka.kanaya@ucsf.edu).

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