



Editorial

Innovation, information technology and task sharing for management of burden of hypertension in India



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Hypertension is a disease of paradoxes. The detection of high blood pressure is very easy but the awareness about hypertension in the population is very low. The disease is easy to treat; still the treatment rates in the population are disappointing. Finally, while there are several potent drugs to control high blood pressure, yet control rates of hypertension are abysmal.

High Blood pressure (HBP) is ranked as the third highest attributable risk factor for burden of disease in South Asia.¹ Hypertension is responsible for 57% stroke deaths and 24% coronary artery disease (CAD) deaths in India.² A recent systematic review revealed that the prevalence of hypertension in adult Indians is estimated to be 30% (34% in urban and 28% in rural areas).³ This analysis was based on review of various investigator initiated epidemiological studies from different regions of India and the prevalence rates of hypertension had regional variation. The study also revealed that the overall prevalence of awareness, treatment and control of hypertension was disappointingly low at 25.3%, 25.1% and 10.7% respectively in rural India and 42.0%, 37.6% and 20.2% respectively in urban India. The PURE (Prospective Urban and Rural Epidemiological study) study data also revealed that in low income countries (with large majority of LIC participants coming from India) low educational status was associated with lower rates of awareness, treatment, and control of hypertension.⁴ The estimated number of individuals with hypertension is expected to double from 118 million in 2000 to 213.5 million by 2025.⁵ The average blood pressure in India has increased in the last two decades, while in most western nations it has shown a decline.⁶

A rural community study from Maharashtra published in this issue of the journal measured prevalence of hypertension in the population.⁷ The prevalence of hypertension detected by recordings on multiple occasions was 21.6% which was same as the

prevalence of hypertension detected by blood pressure recording on a single occasion. This prevalence was similar to that reported in the western rural communities in the systematic review.³ However, this study highlights that the prevalence of hypertension in these areas was lower than other populations in the same region with similar population demographics. This reduction is attributed to the community based Comprehensive Rural Health Programme (CRHP) which was launched in this area in 1970 and is a widely acclaimed programme internationally. This is a population based primary health programme and its BP reduction arm focuses on individuals and groups by promoting salt reduction, opportunities for exercise, healthy diet and weight reduction.

This study brings into focus the importance of health promotion for reducing the burden of hypertension. The staggering number of individuals with hypertension and other chronic diseases in low resource settings like India calls for innovation in management to mitigate this burden, given the severe limitation of physicians especially in rural settings. One of the measures is to employ task shifting/sharing with use of frontline health workers in the prevention of chronic conditions as in this study. Other initiatives are empowering community workers with guideline based validated decision support system (DSS) on a smart phone/tablet platform and using it to manage hypertension in rural settings under the supervision of physicians. These strategies have been successfully used in communicable diseases.^{8,9} Some similar interventions are currently ongoing for prevention and treatment of Non-Communicable Diseases (NCDs) in rural settings.

A recent trial called SIMCARD Trial¹⁰ conducted in villages of Tibet, China and Haryana in India tested the use of community health workers equipped with mobile health technology for blood pressure control. It was a cluster-randomized, controlled trial conducted in 47 villages (27 in China and 20 in India) with an objective to develop and evaluate a simplified cardiovascular management program delivered by health workers with help of smartphone-based electronic DSS among individuals with high cardiovascular risk. They were supported by licensed physicians at

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local health facilities in clinical guidance and medication prescription. The study was designed to be easily incorporated into the local health system. At the end of one year, villagers in intervention group had a 25.5% ($P < 0.001$) higher net increase in patient-reported antihypertensive medication use post-intervention as compared to the control group. There were also significant improvements in systolic blood pressure (-2.7 mm Hg; $P = 0.04$) and aspirin use (net difference: 17.1%; $P < 0.001$).

Another study (mPOWER Heart Project)¹¹ demonstrated that a copyrighted electronic (smartphone/tablet based) clinical decision support software (DSS) tool made patient evaluation structured and ensured adherence to clinical management guidelines in the state of Himachal Pradesh. The DSS was based on contextualized evidence based clinical management guidelines for hypertension and diabetes developed by experts. These were used at 5 community Health Centres (CHC) for nurse led screening and management of these conditions. The DSS generated a personalised management plan for each patient that was vetted by the medical officer as the final prescription. The DSS guided care provided by medical officers was shown to improve clinical care for individual patients in terms of significant blood pressure and blood sugar reduction (unpublished data; personal communication).

An ongoing study titled "Effectiveness of diet and lifestyle intervention through information education communication tools with Anganwadi workers (frontline health workers) as the centre of knowledge dissemination for hypertension risk reduction (DISHA)", funded by the Indian Council of Medical Research is an example of use of frontline health workers in primary prevention of high blood pressure.¹² The project is a cluster randomized trial to test the effectiveness of health promotion activities delivered by trained frontline health workers on population level blood pressure changes. This study is the largest cluster randomized trial in India with 120 clusters and nearly 36000 study participants with the power to detect epidemiologically significant changes in blood pressure. Another multicentre household-level cluster randomized trial involving community health workers in primary prevention strategies at the community level to promote adherence of treatments to prevent CVD (PREPARE) has completed recruitment.¹³

The success of these studies should now shift our efforts towards scaling-up and wider implementation of these strategies. This would help bridge the enormous gap between rising burden of

hypertension and other non-communicable diseases (NCDs) in low resource settings and a limited health system infrastructure which is especially under-equipped to handle NCDs.

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