

Can community based interventions control hypertension in developing countries? What is the evidence from Pakistan?

Farzin Majeed, Ayeesha Kamran Kamal

Stroke Service and Vascular Fellowship Program, International Cerebrovascular Translational Clinical Research Training Program (Fogarty International Center and National Institute of Neurologic Disorders and Stroke), Aga Khan University Hospital, Karachi, Pakistan.

Why is this study important?

Despite convincing evidence that lowering blood pressure decreases all vascular morbidity and mortality, hypertension burden remains high and control rates are poor in developing countries. Hypertension confers the highest attributable risk for stroke death, particularly in developing countries like Pakistan, India and China where hypertension has reached epidemic proportions — affecting 17.9% of all adults >15 years old and 1 in 3 adults > 45 years old. Childhood blood pressure is an established predictor of adult hypertension and adverse effects of elevated blood pressure in childhood on vascular structure and function, specifically LVH, are already apparent in youth. Thus public health interventions to improve hypertension control rates through patient or physician education in South-Asian countries is a dire pre-requisite. This study is about a intervention that helped control hypertension in Pakistan.

What was the study?

Community — based intervention was a cluster randomized controlled trial, undertaken in 12 randomly selected communities in Karachi, to determine the impact of family based home health education (HHE) on blood pressure in children, and adults at a community level over a two year follow up period.

Who were the participants?

A total of 4023 otherwise healthy people, aged between 5-39 years were randomly assigned to receive either home health education (HHE) or no HHE. In addition, this study also recruited 1341 patients 40 years or older with known hypertension or (systolic blood pressure >140 mm Hg, diastolic blood pressure >90 mm Hg on 2 separate visits or already receiving treatment). They were randomly assigned to 4 groups: general practitioner education alone (GP), home

health education alone (HHE), HHE and GP combined or no intervention

What was the intervention?

Home health education was delivered by lay community health workers every 3 months, who after receiving training for 6 weeks, delivered health education messages, including restricted salt-intake, diet rich in fruits, vegetables, low fat dairy products, reducing intake of saturated fat, moderate physical activity, deleterious effects of hypertension, non-drug interventions, maintenance of body weight and tobacco cessation. Achieving blood pressure targets as well as adherence to medications and physician follow-up was also emphasized. All participants were evaluated two years after randomization and intervention.

General practitioners were also given training regarding standard treatment algorithms for the stepped-care management of hypertension, preferential single-dose drug regimen and satisfactory consultation sessions for patients. The recommended target blood pressure was <140/90 mm Hg for all patients.

What were the findings?

In participants, aged 5-39 years, (without hypertension), change in systolic blood pressure was significant; it increased by 1.5 mm Hg in the control group and by only 0.1 mm Hg in the home health education group ($P=0.02$). Findings for diastolic blood pressure were also similar; the change was 1.5 mm Hg greater in the control group than in the intervention group ($P=0.002$). Analyses also showed significant blood pressure reductions in the intervention arm which received home health education.

In hypertensive patients over 40 years of age, there was a significant 10 mmHg improvement in systolic blood pressure in patients who were assigned to both home education and GP group, with a 5 mmHg improvement in all other groups.

In addition to this, a substantially greater proportion of patients (56.9%) achieved controlled blood pressure in the home education and GP group than in the other groups ($P=0.003$).

Adherence to medications was significantly higher in those randomly assigned to receive trained GP care versus untrained GP care, and that those with enhanced adherence had greater blood pressure reduction.

What were the conclusions?

This study concluded that family based home health

education, delivered by a community health worker, had a significant effect in reducing blood pressures in children and young adults. It also demonstrated that among adults hypertensives in a 2-year strategy that combined family-based education and GP education with a case-based curriculum for blood pressure management significantly reduced systolic blood pressure and increased the proportion of adults with controlled blood pressure by nearly 2-fold compared with either intervention alone or with no intervention. This is groundbreaking local work that shows that solutions are possible with education intervention of both the caretaker and the community.

On a broader note, the government funded Lady Health workers programme of Pakistan has been implemented for about two decades, providing immunization and maternal and child care with good results. Pakistan also has a TB control programme. Similar programmes also need to be implemented for control of modifiable risk factors like hypertension which in turn leads to increased cardiovascular, cerebrovascular and renal morbidity and mortality. This combined strategy is simple, is easy and feasible in a developing country, and does not require access to specialist services. Wider recognition of the threat of non-communicable diseases and a broader based strategy are needed for Pakistan.

Acknowledgement and Disclosure Statement:

The International Cerebrovascular Translational Clinical Research and Training Program (ICT_CRT) at the Aga Khan University is supported by funds from the Award Number D43TW008660 from the Fogarty International Center and the National Institute of Neurologic Disorders and Stroke. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Fogarty International Center or the National Institutes of Health.

Recommended Reading

1. Jafar TH, Islam M, Hatcher J, Hashmi S, Bux R, Khan A, Poulter N, Badruddin S, Chaturvedi N; Hypertension Research Group. Community based lifestyle intervention for blood pressure reduction in children and young adults in developing country: cluster randomised controlled trial. *BMJ* 2010; 340: e2641.
2. Jafar TH, Hatcher J, Poulter N, Islam M, Hashmi S, Qadri Z, Bux R, Khan A, Jafary FH, Hameed A, Khan A, Badruddin SH, Chaturvedi N; Hypertension Research Group. Community-based intervention to promote blood pressure control in a developing country: a cluster randomized trial. *Ann Intern Med* 2009; 151: 593-601.
3. Jafar TH. Blood pressure, diabetes, and increased dietary salt associated with stroke- results from a community-based study in Pakistan. *J Hum Hypertens* 2006; 20: 83-5.