

Diagnosis and treatment of hypertension by community health workers in rural Nepal: Main results of the MUTU trial

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Objective: To evaluate the effectiveness and safety of a community health worker intervention for diagnosing and managing hypertension (HTN) in rural Nepal.

Design & Methods: We conducted a quasi-experimental study in two rural municipalities in Nepal, assigning one as an active site (7 communities) and the other as a comparison site (8 communities, which received enhanced usual care). The intervention in the active site involved three home visits for blood pressure (BP) monitoring and counseling by trained community-based community health workers (Female Community Health Volunteers) and treatment of HTN by trained community health workers based in government Health Posts under physician supervision using a simplified protocol with amlodipine. The comparison site received one home visit by Female Community Health Volunteers. A total of 1428 adults with untreated HTN (systolic BP of 140-179 and/or diastolic BP of 90-119 mm Hg) were enrolled. The primary outcome was a reduction in systolic BP at 12 months (measured in 94% of enrolled participants), and the secondary outcome was HTN control rate defined as BP <140/90 mm Hg.

Results: The mean baseline systolic BP was 145.4 mm Hg in the active site (n=576, 46% women) and 146.9 mm Hg in the comparison site (n=760, 46% women). At 12 months, while BP was lower in both sites, mean SBP fell more in the active site [net mean difference of -11.0 mm Hg, (95% CI: -12.5 to -9.6; P<0.001)] (Table). The corresponding net difference in DBP was -6.0 mm Hg (95% CI: -6.8 to -5.1; P<0.001). HTN control and medication treatment were both higher in the active site compared to the comparison site (Table). There were four deaths unrelated to the intervention (2 in the comparison site and 2 in the active site).

Conclusion: In rural communities of Nepal, a health system intervention with trained community health workers diagnosing and treating hypertension, supervised by a physician, substantially lowered BP and achieved higher control rates compared to usual care. The success of this intervention provides strong support of enhanced roles for community health workers to diagnose and treat HTN. Scaling up such interventions could potentially address the major workforce gaps that lead to low HTN control rates, particularly in rural communities of low and middle-income countries.

Table: BP change at 12-month and proportion of hypertension control and antihypertensive medication use at 12-month comparing active and comparison groups.

	Active (Rupa)	Comparison (Biruwa)
	N=576	N=760
Mean SBP (mm Hg)		
Baseline	145.4	146.9
Change at 12 months	-14.9	-3.9
Difference in Change	-11.0 (95% CI: -12.5 to -9.6; P<0.001)*	
Mean DBP (mm Hg)		
Baseline	97.7	97.5
Change at 12 months	-9.5	-3.5
Difference in Change	-6.0 (95% CI: -6.8 to -5.1; P<0.001)*	
HTN control at 12 months		
Number (proportion) of HTN under control at 12 months	414 (71.9%)	166 (21.8%)
Relative Risk	3.3 (95% CI: 2.5 to 4.3; P<0.001)*	
Medication use at 12 months		
Number (proportion) of medication use at 12 months	232 (40.3%)	47 (6.2%)
Relative Risk	6.5 (95% CI: 4.1 to 10.3; P<0.001)*	

Note: "*" Model adjusted for baseline age, sex, daily smoke tobacco use, daily smokeless tobacco use and alcohol consumption in past 7 days, and also adjusted for communities. Hypertension under control was defined as SBP<140mmHg and DBP<90mmHg. Antihypertensive medication was defined as using any type of antihypertensive medicine.