

- 11 McRae C, Cherin E, Yamazaki TG, et al. Effects of perceived treatment on quality of life and medical outcomes in a double-blind placebo surgery trial. *Arch Gen Psychiatry* 2004; **61**: 412–20.
- 12 Piallat B, Benazzouz A, Benabid AL. Subthalamic nucleus lesion in rats prevents dopaminergic nigral neuron degeneration after striatal 6-OHDA injection: behavioural and immunohistochemical studies. *Eur J Neurosci* 1996; **8**: 1408–14.
- 13 Luo J, Kaplitt MG, Fitzsimons HL, et al. Subthalamic GAD gene therapy in a Parkinson's disease rat model. *Science* 2002; **298**: 425–29.
- 14 Berns GS, Sejnowski TJ. A computational model of how the basal ganglia produce sequences. *J Cogn Neurosci* 1998; **10**: 108–21.
- 15 Lang AE, Obeso JA. Time to move beyond nigrostriatal dopamine deficiency in Parkinson's disease. *Ann Neurol* 2004; **55**: 761–65.

Community health-workers: scaling up programmes

Published Online
 March 6, 2007
 DOI:10.1016/S0140-6736(07)60326-2
 See [Review](#) page 2121

In today's *Lancet*, Andy Haines and colleagues¹ review the changing fortunes of community health-worker (CHW) programmes and the current favouring of large-scale interventions by CHWs. They present adequate evidence that CHWs are necessary and effective, but caution that success depends on specific contexts and that effectiveness in large-scale programmes is far from settled. Their discussion is especially timely for India, where state-wide CHW programmes are under way as part of the National Rural Health Mission. The Mitadin programme of Chhattisgarh state in India highlights the many dilemmas and possibilities in the scaling-up of such programmes (figure).

Created in 2000 by division of the large central state of Madhya Pradesh, Chhattisgarh inherited a public-health system that had an inadequate number of facilities and human resources. In the context of high illiteracy and poverty, and with a third of the population consisting of indigenous people, the 3818 health subcentres (staffed by one auxiliary nurse in every centre) were

unable to provide outreach services to the 18 million rural population dispersed over 54 000 habitations.² In 2000, Chhattisgarh had a rural infant mortality rate of 95 deaths per 1000 livebirths—the second highest in Indian states.

It was in such a context that the state government, in consultation with representatives of civil society, decided to establish a strong team of 54 000 women community volunteers called Mitadins. The role of these volunteers evolved over time into a set of activities that focused on child survival and essential care of newborn babies, and into another set of rights-based activities that enabled access to basic public services as fundamental entitlements to be secured through women's empowerment and community action.³ The programme envisaged a synergy of health services at community, outreach, and facility levels as essential for success. The programme was characterised by a mix of family-level outreach activities (mainly essential care of newborn babies, nutritional counselling, and case management of illnesses that are common in childhood) with community-level organisational efforts and larger social mobilisation that made extensive use of different cultural forms of communication to highlight health rights. Leadership was addressed by the formation of a unique partnership between state and civil society. In the programme, a team of 3000 motivated women fulfilled a role as middle-level supervisors and trainers to address the issues of human resources and the usual poor support from health personnel that has troubled efforts of other CHWs.⁴ Furthermore, the programme developed the skills to negotiate with key decision-makers, and perhaps had the good fortune to enjoy continued political space to persist into its fourth year of implementation.

Consistent with other large-scale efforts discussed by Haines and colleagues, the Mitadin programme faces challenges of evaluation—an inherently difficult exercise at such a scale. Process evaluation of selection, training,



Figure: Mitadins in Baiga during social-mobilisation event

Thiagarajan Sundararaman

and community mobilisation was possible for the Mitadin programme, but there were no community-level baselines or controls in the programme design to measure outcomes, and sufficient sample sizes were neither easy nor affordable. At this stage, outcomes can be assessed only by use of indicators in independent surveys of national health and demographics. These surveys show that the rural infant mortality in Chhattisgarh decreased from 85 deaths per 1000 livebirths in 2002 to 65 deaths per 1000 livebirths in 2005,⁵ which is much the same as the national rural infant mortality rate (64 deaths per 1000 livebirths). However, estimation of the precise contribution of the Mitadin programme to this decrease is difficult.

Much of the improvement in child survival in Chhattisgarh undoubtedly relates to better health-seeking behaviour and child-care practices. The initiation of breastfeeding in the first 2 h after birth increased from 24% of livebirths to 71% of livebirths,⁶ and the use of oral rehydration salts in the management of diarrhoea in children younger than 3 years increased by 12% in the 2 weeks before the survey.⁷ These two interventions substantially affect child survival,⁸ and were highly monitored and effective Mitadin interventions. Other recorded improvements include total immunisation and antenatal care, to which Mitadins would have lent support.⁷

Community participation and the empowerment of women cause change.⁹ The many Mitadins who have since entered elected office in local governance bodies, and the successful Mitadin-led community actions against deforestation, for securing of tribal livelihoods,¹⁰ for early childhood-care facilities,¹¹ or against alcohol-

ism and corruption are testimonies to the so-called unintended positive outcomes. However, as the programme grows, these actions will pose new problems for the sustainability of large-scale CHW programmes, and might again lay bare the tensions between the different expectations and descriptions of the CHW.¹²

Thiagarajan Sundararaman

State Health Resource Centre, Kalibadi, Raipur 492001, India
sundararaman.t@gmail.com

I thank Mekhala Krishnamurthy and Samir Garg for their comments. I declare that I have no conflict of interest.

- 1 Haines A, Saunders D, Lehmann U, et al. Achieving child survival goals: potential contribution of community health workers. *Lancet* 2007; published online March 6. DOI:10.1016/S0140-6736(07)60325-0.
- 2 Department of Public Health and Family Welfare, Government of Chhattisgarh. Annual administrative report 2002–2003. Raipur: Department of Public Health and Family Welfare, 2003: 47.
- 3 State Health Resource Center. Mitadin programme—conceptual issues and operational guidelines. September, 2003: <http://www.shsrc.org/pdf/Mitadin%20Programme%20Conceptual%20Issues%20and%20Operational%20Guidelin.pdf> (accessed Feb 27, 2007).
- 4 Walt G, Perera M, Heggenhougen K. Are large-scale volunteer community health worker programs feasible? The case of Sri Lanka. *Soc Sci Med* 1989; **29**: 599–608.
- 5 Registrar General, India. Vital statistics: sample registration system (SRS) bulletins. April, 2006: <http://www.censusindia.net/vs/srs/bulletins/index.html> (accessed Feb 27, 2007).
- 6 UNICEF and Mode Services Pvt Ltd. Coverage evaluation survey 2005, all India: a report. New Delhi: UNICEF, 2006: 90.
- 7 National Family Health Survey, India. Key findings from NFHS-3. 2006: <http://www.nfhsindia.org/factsheet.html> (accessed Feb 27, 2007).
- 8 Jones G, Steketee R, Black R, for the Bellagio Child Survival Group. How many child deaths can we prevent this year? *Lancet* 2003; **362**: 65–71.
- 9 Manandhar DS, Osrin D, Shrestha BP, et al. Effect of a participatory intervention with women's groups on birth outcomes in Nepal: cluster-randomised controlled trial. *Lancet* 2004; **364**: 970–79.
- 10 Kohli K. Two crore trees and livelihoods of thousands at stake. *Infochange Features* May, 2006: <http://www.infochangeindia.org/features362.jsp> (accessed Jan 24, 2007).
- 11 Garg S. Grassroots mobilisation for children's nutritional rights. *Econ Polit Wkly* Aug 26, 2006: 3694.
- 12 Werner D. The village health worker—lackey or liberator? Palo Alto: Hesperian Foundation, 1977.

The metabolic syndrome in children and adolescents

The metabolic syndrome in adults is defined as a cluster of risk factors for cardiovascular disease and type 2 diabetes mellitus, which include abdominal obesity, dyslipidaemia, glucose intolerance, and hypertension.^{1,2} In 2005, the International Diabetes Federation (IDF) published its definition of the metabolic syndrome in adults.² However, to date no unified definition exists to assess risk or outcomes in children and adolescents.

Early identification of children who are at risk of developing the syndrome, type 2 diabetes mellitus,

and cardiovascular disease in later life is important. Circumstances in utero and in early childhood predispose a child to disorders such as obesity, dysglycaemia, and the metabolic syndrome.^{3–5} Furthermore, urbanisation, unhealthy diet, and sedentary lifestyle are major contributors to such disorders.¹ Obesity is associated with increased risk of cardiovascular disease, which may persist from childhood and adolescence into young adulthood.^{4,6}

A clinically accessible diagnostic tool is needed to identify the metabolic syndrome in young people