

# gOPINION

VIEWPOINT

## Non-Communicable, Chronic Disease Training and Education Needs in India

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### PROBLEM STATEMENT

The drivers of non-communicable, chronic diseases (NCDs) are complex, and include urbanization and migration, economic, agricultural and energy policies, and education and access to health care. Such a diverse array of causes has led to uncoordinated and insufficient political, financial, and social investments to combat the rising NCD epidemic [1]. Health professionals are crucial players in a successful response to NCDs, not only in terms of providing health services; they can also help to inform, monitor and advocate for the necessary policies and structures that facilitate NCD prevention and control by addressing the drivers that lie outside the health sector.

Yet, most low- and middle-income countries (LMICs), like India, have a severe shortage of qualified health workers and health researchers [2–5], worsened by the emigration of bright and enterprising public health and medical professionals [6,7]. This “brain-drain” is driven by under-developed training infrastructure, relatively low pay, limited opportunities for sustained career development, and a small number of mentors. Global health experts have acknowledged this problem, stressing that transdisciplinary, translational training can provide a stronger public health, clinical and health research workforce to tackle the NCD epidemic [2–4]. However, the United Nations (UN) Secretary General’s report [8], Moscow Declaration [9], and Zero Draft Document [10] have all failed to include specific recommendations that move beyond “health system strengthening” to specific training plans, especially in LMICs.

### RECOMMENDATIONS

The September 2011 UN High-Level Meeting on NCDs is a critical opportunity to address this insufficiency and to reformulate current training paradigms in countries such as India. Based on a recent report to improve higher education in India [11], we provide seven recommendations for the development of NCD training and education in India following the UN High-Level Meeting (on behalf of the Young Professionals’ Chronic Disease Network):

- (1) *Increased investment*: Greater investments are needed to improve the training, quantity, and quality of a diversified cadre of medical, paramedical, and public health professionals in India, a core institutional impediment to NCD prevention and control as described by the World Bank [12,13].
- (2) *New nodal agencies*: Academic, government, and non-governmental nodal agencies should be created and nurtured to build supportive environments, to provide high-quality education and training, to convene and coordinate local, regional, and national NCD research activities, to establish global health outreach programs, and to collaborate in international initiatives that address neglected global health issues [14–16].
- (3) *Transdisciplinary teaching*: Progressive teaching styles that encourage students to think independently, creatively, and critically are urgently needed in countries like India, where hierarchy and excessive bureaucracy continue [17,18]. Curricula should infuse a deeper understanding of complex health issues, transdisciplinary approaches to prob-

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lem-solving, analytical skills, leadership, and effective written and verbal communication skills to generate global leaders [19–24]. A greater appreciation of non-traditional determinants of health will further allow young Indian health professionals to design and implement initiatives that can effectively reduce the burden of NCDs [25,26].

- (4) *Expand e-learning and exchanges*: Newer technologies that enable mass outreach such as e-learning programs need to be expanded [27–30]. Innovations in training, research and practice in delivery of health services, public health services, and research will need to be implemented, assessed, and disseminated in a cost-effective, tailored manner [31]. Faculty exchanges between institutions (nationally and internationally) may help to synergistically augment standards of education. Commissioned education expert groups have appropriately called for a shift from science- and problem-based training to systems-based training with a focus on teamwork and competency-based curricula for which e-learning and exchanges are well-suited [4,32,33].
- (5) *Enhanced quality and quantity of mentors*: More mentors, both inside and outside of India, are needed to nurture the developing, young pool of talent. Strategies promoting retention of these role models to young students and researchers in the field of NCDs should be devised and adopted. Strong synergistic collaborations/partnerships with developed and developing countries should be encouraged to catalyze solutions to emerging and existing threats to public health [24].
- (6) *Recruitment and retention*: Monetary and non-monetary incentives need to be provided during and after training and to help recruit and retain the best and brightest of India [34–36]. Additional incentives include creation of novel career paths, mentor relationships (including trans-institutional mentoring), and funding/training opportunities.
- (7) *“Yes to youth”*: Governments, universities, and other training programs should actively seek input from young professionals on global NCD issues to harness their energy, creativity and leadership and recognize their role as a key partner in combating NCDs now and in the future. Immersion in real-world training and program development will provide critical experience to the budding/future leaders for a stronger foundation.

## SUCCESSFUL EXAMPLES

The establishment of knowledge hubs and centers of excellence to promote necessary synergies, sharing of resources, ideas and facilities to increase capacity for tackling NCDs is beginning [37,38]. For example, the Public Health Foundation of

India (New Delhi) and its collaborative partners, the Centre for Chronic Disease Control (CCDC), the South Asia Network for Chronic Diseases, (New Delhi) host innovative courses, programs, and fellowships which are aimed at producing high-quality public health professionals and addressing the deficit of trained workforce within India [39], such as an online post graduate diploma course in public health nutrition started in 2011 [40].

Indira Gandhi National Open University (IGNOU) – a Government of India (GoI) initiative – has been a pioneer in contributing to the development of higher education in the country (for more than two decades) through the open and distance learning mode. They run a one year Post Graduate Diploma in Clinical Cardiology (since 2006) “to train larger numbers of medical graduates to deal effectively with the early recognition, management and prevention of common cardiovascular diseases (non-invasive cardiology) and associated diseases particularly Diabetes Mellitus” [41].

Other centers of excellence include the St. John’s Research Institute (Bangalore), Sangath (Goa), and Sree Chithra Tirunal Institute for Medical Sciences & Technology (Trivandrum), among others, which lead large observational studies, clinical trials, and vanguard training programs in medicine, mental health, allied health, public health, and research methodology (see Table 1). Recently developed joint fellowships and research funding opportunities have also been developed through the Indian Council for Medical Research (ICMR)–Medical Research Council (MRC) UK, GoI – World Health Organization, and Global Alliance for Chronic Diseases, a consortium of six foremost health agencies, which includes the ICMR as an invitee [42–44]. Collectively, these innovative programs provide roadmaps for future growth in NCD education and training and contribute critical infrastructure for the growth and development of the necessary health workforce of the future.

## CONCLUSIONS

We provide seven recommendations to enhance NCD training and education in India. This vision of comprehensive NCD prevention and control, especially in India, can become a reality by capitalizing on demographic strengths; investing in higher education and quality research; pooling resources; integrating existing knowledge (currently housed, often unused, in silos) with novel ideas or strategies for tackling NCDs; and providing opportunities to

**Table 1. Fellowships and training programs for NCD in India.**

Institution(s)/partners	NCD relevant fellowships/training programs
Armed Forces Medical College	Research Methodology, Data Analysis and Management, Biostatistics and Data Management, Epidemiology Website: <a href="http://afmc.nic.in/">http://afmc.nic.in/</a>
Centre for Chronic Disease Control/Emory University, Atlanta	D43 Post-Doctoral Research Training in NCDs Website: <a href="http://www.ccdcindia.org">http://www.ccdcindia.org</a>
Centre of Excellence–Centre for cardiometabolic risk reduction in South Asia (CoE-CARRS)	Short term training in nutrition, physical activity <a href="http://www.coecarrs.org/coe/">www.coecarrs.org/coe/</a>
Chhatrapati Shahuji Maharaj Medical University	Public Health Management Website: <a href="http://www.csmmu.in/">http://www.csmmu.in/</a>
Child and Adolescent Services, NIMHANS	Child Assessment and Treatment of Psychiatric Disorders, Issue in Child and Adolescent Mental Health Website: <a href="http://www.nimhans.kar.nic.in">http://www.nimhans.kar.nic.in</a>
Christian Medical College	Distance Fellowship in Diabetes Website: <a href="http://www.cmch-vellore.edu/">http://www.cmch-vellore.edu/</a>
Christian Medical College; Public Health Foundation of India; St. John's Research Institute	NIH Fogarty International Clinical Research Training Scholars' program Website: <a href="http://www.phfi.org">http://www.phfi.org</a>
Department of Psychiatry and De-addiction Services, PGIMER – Dr. RML Hospital	Introduction to Principles of Genetic Counselling Website: <a href="http://rmlh.nic.in">http://rmlh.nic.in</a>
Department of Psychiatry, AIIMS	Drug De-addiction Website: <a href="http://www.aiims.edu">http://www.aiims.edu</a>
Dept. of Biotechnology-Wellcome Trust	Biomedical Research Fellowship Programme for India: Early Career Fellowships for Researchers in India Website: <a href="http://www.wellcome.ac.uk/">http://www.wellcome.ac.uk/</a>
Dr. Rajendra Prasad Government Medical College	AYUSH Practitioners' Role in NCD Health Promotion, Training of AYUSH Practitioners under national Programmes Website: <a href="http://www.rpgmc.ac.in/">http://www.rpgmc.ac.in/</a>
Indian Institute of Health Management Research (IIHMR)	Health Management and Financing, Monitoring and Evaluation of Health Programmes Website: <a href="http://www.iihmr.org/">http://www.iihmr.org/</a>
Indian Institute of Public Health	Social & Behavior Research Website: <a href="http://www.phfi.org/">http://www.phfi.org/</a>
Indian Institute of Public Health – Delhi	Health & Disease Burden Estimation Website: <a href="http://www.phfi.org/">http://www.phfi.org/</a>
Institute of Cytology and Preventive Oncology (ICMR)	Cytopathology for Pathologists and Lab Technicians Website: <a href="http://www.icmr.nic.in/">http://www.icmr.nic.in/</a>
Institute of Pathology (ICMR), Safdarjung Hospital Campus	Advanced Training Course for Lab Technicians Website: <a href="http://www.icmr.nic.in/">http://www.icmr.nic.in/</a>
Intellectual Property Right Unit (IPR), ICMR	Internship in IP & Technology Transfer Website: <a href="http://www.icmr.nic.in/ipr">http://www.icmr.nic.in/ipr</a>
International agency for research on cancer	IARC Fellowships for Cancer Research Website: <a href="http://www.iarc.fr/">http://www.iarc.fr/</a>
International Society of Cardiovascular Epidemiology and Prevention	International Ten-Day Seminar on Cardiovascular Epidemiology and Prevention Website: <a href="http://www.councilhearthealth.org">http://www.councilhearthealth.org</a>
National Institute of Epidemiology	Epidemiology and Biostatistics Training Website: <a href="http://www.nie.gov.in/">http://www.nie.gov.in/</a>
National Institute of Health and Family Welfare	Training Course on Monitoring and Evaluation of RCH Programme, Professional Development Course in Management, Public Health and Health Sector Reforms for District Medical Officers, Training Course on Monitoring under NRHM/RCH Website: <a href="http://www.nihfw.org/">http://www.nihfw.org/</a>
Natural Products Research Institute NIMHANS	Standardization of Traditional Medicine Processing Methodologies of Herbal Materials Community Mental Health Website: <a href="http://www.nimhans.kar.nic.in/">http://www.nimhans.kar.nic.in/</a>
Patna Medical College	Geriatrics Website: <a href="http://www.pmch.us/">http://www.pmch.us/</a>
Public Health Foundation of India/Johns Hopkins; University of Southern California	Short-Term (Certificate) Courses on Tobacco Control Website: <a href="http://www.phfi.org/">http://www.phfi.org/</a> <a href="http://www.jhu.edu/">http://www.jhu.edu/</a>
Public Health Foundation of India; St. John's Medical College	NIH Fogarty International Clinical Research Training Fellows' Program Website: <a href="http://www.phfi.org/">http://www.phfi.org/</a> <a href="http://www.stjohns.in/">http://www.stjohns.in/</a>
Sangath	Development and Evaluation of Complex, Health Care Interventions, Leadership in Mental Health Website: <a href="http://www.sangath.com/">http://www.sangath.com/</a>
Seth G S Medical College & KEM Hospital	Critical Care Medicine, Health Care Procedures from AYUSH, Public Private Partnership in Health, Monitoring and Evaluation of Health Programmes Website: <a href="http://www.kem.edu/">http://www.kem.edu/</a>
South Asia Network for Chronic Diseases	Introduction to Systematic Reviews, Mixed Methods and Qualitative Research Website: <a href="http://www.sanecd.org/">http://www.sanecd.org/</a>
Sree ChithraTirunal Institute for Medical Sciences & Technology	Ethics in Public Health, Chronic Disease Epidemiology, WHO Fellowship Training Program on Community-Based Interventions in Cardiovascular Diseases Website: <a href="http://www.sctimst.ac.in">http://www.sctimst.ac.in</a>
St. John's Research Institute	Bangalore-Boston Nutrition Collaborative Website: <a href="http://www.sjri.res.in/">http://www.sjri.res.in/</a>

the younger health workforce for innovation and sustainability [45]. "Train, retain, and sustain" should be our mantra [46].

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