

Editorial

Non-communicable Diseases from a Public Health Perspective

Non-communicable diseases (NCDs) contribute to morbidity and mortality and add to a country's burden of disease. Although NCDs are complex conditions, most of them are preventable. Yet, majority of the efforts are dedicated to finding curative solutions. This editorial argues for the need to refocus our efforts to combating NCDs using population-based public health approaches.

Population-based approaches to health promotion aim to address dynamic social and structural factors, which support healthy lifestyle of communities, regions and nations. They seek to alter the milieu through changed policy, new regulation, unique practices and different social norms for the creation of a culture of wellness and an environment that supports healthy choices.

Nevertheless, many recent trends have aided the search for individual solutions to NCDs. Evidence-based medicine (EBM), described as a science of marginal gains,¹ is used to champion curative treatments. The spectacular advances documented for specific conditions (e.g. HIV and *Helicobacter pylori*-positive peptic ulcer) have not been achieved for the treatment of NCDs. The unmanageable volume of evidence, their marginal clinical gains, the inflexible rules and algorithms, which map poorly on complex multimorbidity, do not lead to patient-centred care.¹ The cost of generating the evidence, the higher probability that medication trials funded by the pharmaceutical industry selectively support their molecules² and the contradictory and changing evidence complicates the picture.³ Issues related to efficacy, effectiveness and generalizability add to confusion.^{4,5}

Marginal gains have resulted in a shift of emphasis from treating diseases to managing risk factors.¹ While diabetes mellitus has the halo of disease, impaired glucose metabolism is actually a risk factor for a variety of conditions such as cerebrovascular accidents, neuropathy, chronic renal disease, retinopathy and infection. Hyperglycaemia is not only a risk factor for cardiovascular disease in people with diabetes but also a risk factor for cardiovascular events in apparently healthy people without diabetes.⁶ The progressive relationship between non-diabetic blood glucose levels and cardiovascular disease is established.⁷ Similarly, raised blood pressure, cholesterol and lipid levels, which are also risk factors for diseases, produce diverse pathology in different organ systems.

Factors such as blood levels of glucose and lipids, and blood pressure, which increase the risk of pathology in many organs, generally have a linear relationship with disease; increasing risk of disease is associated with rise in levels of these risk factors. Nevertheless, in clinical medicine such associations are routinely dichotomized into normal and abnormal ranges, using thresholds which are considered optimal to demarcate pathology/risk. Over the past few decades, many of these thresholds that indicate abnormality have been lowered. Values above the recommended thresholds are considered indicative of pathology when, in reality, they essentially imply increased risk for disease(s). The lower blood pressure thresholds recently suggested are part of the same trend.⁸ The complex algorithms result in marginal clinical gains while producing windfall profits for the pharmaceutical industry.

Despite the scientific basis of EBM, its technical approaches are neither necessarily value-neutral nor above specific interests.⁹ The political economy of health, deeply rooted in capitalist economic and social systems, underlies these diagnostic formulations and management guidelines. It reiterates the historical relationship between medicine and the state; with governmental administration serviced by a section of experts responsible for

managing social security, stability and economic growth.¹⁰ It is an example of the broader role of medicine, of social control.

Disease labels and individual treatments offer distinctive niches to diverse stakeholders: disease narratives and reimbursement for physicians, corporate profits for health, insurance and pharmaceutical industries and deflection of responsibility for governments. Clinical guidelines and the culture of medicine fit in well with the neoliberal agenda, allowing the free market to expand its business interests. It demonstrates the nested position of the discipline of medicine, within the agendas of governing, which determine perspectives, formation of knowledge, institutional control and policy.¹⁰ Medicine is politics writ large and the health sector is a powerful player in national economies.

On the other hand, the frequency of 'cases', both identified as increased risk and those labelled diseases, can and should be understood only in the context of a population's characteristics. The associations between the population mean and the prevalence of deviance, demonstrated for many NCDs, has major implications for the health of populations and for individuals. The close and independent association for blood pressure, body mass index, alcohol consumption and sodium intake and the prevalence of, hypertension, obesity, high alcohol intake and high sodium intake, respectively, supports the contention that the distributions of health-related characteristics move up and down as a whole.¹¹ Similar trends have been documented for depression. Efforts at reducing population means will also reduce the number of people identified as requiring individual and curative interventions, supporting population-based approaches. Societies and nations, thus, have a collective responsibility for their own health and well-being, including that of those at higher risk and the sick within their populations.

There is strong evidence to link physical and mental health to the social and economic environment and longevity to improved living standards.¹² Historical parallels between the reduction in many infectious diseases (e.g. tuberculosis and cholera) suggest that mortality reduced long before the introduction of specific interventions (i.e. vaccines and antibiotics). The provision of clean water, sanitation, nutrition and housing decreased transmission and contributed considerably to reduction in epidemics and mortality in the West and these occurred before the introduction of specific curative strategies. The historical analysis of suicide in England and Wales (1863–2007) demonstrates similar associations. Much higher rates were recorded in the early 20th century, particularly during the Great Depression of the 1930s.¹³ The steady decline in suicide rates after the Second World War coincided with the introduction of public health interventions such as social security. Similar reductions have been documented in the USA, Australia and New Zealand.

Nevertheless, there are calls for evidence-based public health,¹⁴ which demand strong evidence that population-based approaches actually work. While there is substantial evidence that basic needs such as clean water, sanitation, nutrition, housing, gender justice, employment, universal healthcare and social security are essential to physical and mental health and consequently provided to populations in many high-income countries,¹² they are termed impractical and extravagant for low-income and middle-income countries (LMICs), which continue to fund medication-based solutions rather than use population-based preventive strategies. Similarly, the positive effects of taxation on alcohol, tobacco, energy-dense foods and sugar-sweetened beverages on the burden due to these substances on physical and mental health are often ignored in LMICs.

Population-based solutions are often dismissed as 'socialistic' remedies by capitalist economies, which then fail to fund projects to generate evidence and to implement public health solutions. Nevertheless, policy-planners in LMICs accept global priorities such as intellectual property rights, universal health coverage, private insurances and technology-centric answers to control NCDs and work within neoliberal frameworks, without the need to generate local and national evidence. Profits seem to trump population health in LMICs; the foundation for policies is often based on fiscal needs rather than public health advocacy.

There is a need to rethink medical practice and for critical reflection on the medical culture. The current model prioritises individual and curative solutions over population-based and public health approaches. Economic, political and philosophical biases not only influence the choice of approaches to individual and population health but may also place an ideological bar on the implementation of alternative strategies.

Population-based approaches should be the natural choice for preventing NCDs. For example, nutrition policies in India have a major impact on the health status of children and adults. Chronic hunger and undernutrition are widespread.¹⁵ The search for low-cost

diet, a simplistic classification of foods and indices, and an undue focus on calories has resulted in nutritional depletion and the current crisis of hunger.¹⁶ While the policy of cheap cereal-based food actually worked over 1960s and 1970s, reducing severe forms of undernutrition such as Marasmus and Kwashiorkor, there has been a reduction in calorie intake in the post-liberalization era.¹⁷⁻¹⁹ Despite the National Food Security Act of 2013, its poor implementation through the public distribution system, the exclusion of pulses and traditional oils from its ambit, the export of grain to international markets and rotting grain in warehouses of the Food Corporation of India to keep market prices high, have all contributed to markedly reduced calorie intake among the poor over the past few decades.¹⁹

Cheap wheat and rice, available through public distribution systems, also destroyed many regional food options (e.g. millets) with their richer sources of nutrients. Children are not able to eat the amount of cereals required to even meet the daily calorie requirement, let alone ingesting a balanced diet, ending up with childhood malnutrition.¹⁶ School nutrition programmes and mid-day meal schemes, while improving the nutritional status of India's children, are unable to reverse the impact of undernutrition. Foetal and childhood development has a profound impact on one's risk for developing of future adult disease; low-birth weight, a surrogate marker of poor foetal growth and nutrition, is linked to coronary artery disease, hypertension, obesity and insulin resistance.^{20,21}

The relative availability of cereals to the lower middle classes and the high cost of pulses and other sources of protein also leads to obesity and metabolic syndrome in adults lowering immunity, making them prone to infections, risk factors (e.g. diabetes, hypertension, obesity and dyslipidaemia) and chronic diseases.^{1,6}

India needs to re-examine its approach to NCDs.²² Its success with tertiary care has skewed its focus in managing NCD with curative solutions rather than population-based approaches and public health strategies. The current emphasis on curative medicine is inadequate for the task of preventing NCDs, which essentially require public health approaches to reduce their population incidence and prevalence rates. In addition, the provision of basic needs are fundamental human rights;^{12,23} their provision is crucial for combating the NCD epidemic.

Healthcare mistakenly employs urgency-driven curative solutions instead of preventive population health measures.²³ Multidimensional phenomena such as NCDs require public health interventions to reduce their rates within populations. Many inputs—political, financial, social, cultural, science, engineering, educational, religious and legal—in addition to medical, are required to improve population health.²⁴ While public health goals are accepted by these different sectors, it is politics and economics, which are crucial for their delivery. Unfortunately, politics talk about population health before elections, quickly losing interest till the next election cycle, while finance prefers profits from curative medicine.²⁴ Without political will and financial commitment to the prevention of NCDs through population-based approaches, prevention would remain on paper with the curative strategies currently advocated inadequate for the task of reducing population rates.

The reduction in NCDs with their considerable morbidity and mortality will be possible only if academics, activists and professionals in different sectors engage with the health of populations, own public health goals and seriously attempt to influence national policies. The challenge within the medical profession is to convince medical practitioners, researchers, academics and policy-makers to support population and public health strategies and provide an alternative vision for the prevention of NCDs, which might multiply to become an engine for unconventional ways of thinking to overcome the mammoth task of preventing NCDs.

Conflicts of interest. None declared

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