

*Special Issue on The Deepening of Disciplinary Content: Public Health in Post-Covid
India*

EDITORIAL

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We are amid the COVID-19 pandemic, the biggest public health event in a century that has caused illness in almost 180 million persons and loss of over 4 million lives worldwide, and disrupted the social and economic life of all societies. More such crises are predicted to occur in the coming decades, and there are massive pre-existing unaddressed public health needs in all countries. It is to be anticipated that in the post-COVID world there will be greater attention to the oft-neglected discipline of public health.

The scientific response in terms of identifying the causal virus, its genetic structure, and the possible dynamics of the disease in populations with measures to prevent its spread came more swiftly and on a wider scale than in the case of any previous disease. However, the response to this pandemic highlighted several fault lines in our global, national and sub-national health systems, primarily highlighting weaknesses that already existed and got accentuated. Clinical medical technologies and non-pharmaceutical interventions have been drawn upon to limit the spread, diagnose and treat the cases, all in the name of public health. Yet, there has been limited application of the available public health knowledge and experience, as evidenced by several gaps in the pandemic response that have been pointed out by several public health professionals internationally ([Kulldorf et al. 2020](#)) and in the joint statements of the Indian Public Health Association, the Indian Association of Epidemiologists and the Indian Association of Preventive and Social Medicine ([IPHA and IAPSM 2020](#); [IPHA, IAPSM and IAE 2020](#)). This medical-clinical dominance over public health has also been one of the pre-existing fault lines, and we are hoping that this pandemic will bring greater acknowledgement of the salience of public health and strengthen its role in health knowledge generation, policy and planning.

It is in this context that we think it is relevant to examine how the discipline of public health is poised at this juncture to take on a larger role in the Indian context. While, in our view, this should be undertaken as a much larger exercise in the country and globally, here we point

only to the enhanced possibilities that developments over recent decades have created for the deepening of its disciplinary content. Public Health must continue to build the case for a Public Health Cadre in the country (WHO SEARO 2000) so that it is in a stronger position to deliver on its promise more effectively. On the other hand, it needs to review its own disciplinary theoretical content as well as its practice, to prepare itself better for a larger role. Only by strengthening itself to respond to the challenges and opportunities of the 21st century can the discipline make its mark in the post-COVID world.

The challenge that India and other low and middle middle-income countries face as regards health service systems is to create a balance between, on the one hand, (i) ensuring functional infrastructure for meeting basic health needs of all even where almost none exists and (ii) integrating it efficiently with the cultural context of local knowledge of prevention and cure, and on the other, (iii) ensuring effective and timely access to higher levels of plural, rational and quality care when required. Conventional public health systems and health programmes tend to work with universalised protocols for a mass application while satisfying the diversity of health needs requires the population to individual level specificity of a contextual diagnosis and treatment regimen. The challenge is of evolving feasible and affordable systems facilitating each of these three elements in ways that address the concerns of health care providers and the aspirations of the users of services in the 21st century. Reviewing the history of health services development to learn lessons from it is vital for building upon the gains of the past. Health systems research that creates institutional understandings for multiple perspectives to develop on each one's strengths and allow them all to flower within the rubric of a socially-oriented health system needs consideration of various knowledge systems and social perspectives.

Health inequalities are probably at their widest in the present times, within and across societies, both in terms of access to healthy living and work conditions, as well as resources for health care. The divide within societies creates challenges of accessibility and availability of health care equally and equitably across disparate social, religious and economic groups, as amply evidence during this pandemic. More equitable health systems strengthening for 'normal' and pandemic times demand mapping and strengthening of the requisite infrastructure and trained manpower from village to district levels and beyond to cities. Any centralized effort at provisioning has a possibility of not reaching the last person in need, more so if it is based on the principles of corporate chains for provisioning and insurance-based financing (Ghodajkar et al. 2019).

Public Health is inherently an interdisciplinary field of study and application. Epidemiology, health systems research, social dimensions of health, health technology and management studies interact to provide an understanding of the complexity of this field, which must then be applied to planning and policymaking. By the 1960s, it was largely a bio-medicine and administrative governmentally informed subject, with social sciences trying to make an entry. However, by the 1980s, health economics, medical sociology and medical anthropology, medical geography, health management, had all made enough advances to make their presence felt and become essential components of the 'technical knowledge' of public health

([Rosenfield 1992](#); [Banerji 1986](#)). Over the past two decades, bio-medicine itself has widened its horizons with the development of ‘systems biology,’ genomics, proteomics and the like. Patient-centred care and ‘Integrative health care’ have emerged as significant areas of research ([Goodwin 2016](#); [Patwardhan 2010](#); [Shankar 2010](#); [NIH 2021](#)) and the traditional health knowledge systems have gained in salience. Unfortunately, despite these advancing conceptualisations, the overcoming of a Cartesian body-mind divide in bio-medical understandings, a greater appreciation of social determinants of health, of the political economy of health and health care, and medical pluralism, along with efforts at decolonisation of knowledge and building in cultural sensitivity ([Krieger 1999](#)), none of this is penetrating the core of Public Health education, research and practice.

Quantitative demographic data and bio-statistics form the base on which epidemiology and health systems analysis is built. Epidemiology has evolved from its initial set of relatively basic mathematical computations to complex statistical formulations, applied often with reductionist and sometimes with more nuanced approaches ([Alahmadi et al. 2020](#)). The use of Information and Communication Technologies (ICT) has led to Health Management Information Systems capturing real-time data from individual health to small population sub-groups and then bigger population groups to national and international data sets. It has contributed to interactive platforms for healthcare, telemedicine and so on, which proved increasingly useful during this pandemic in diverse settings. Contact tracing and isolation on the ground were supported by search result correlation and mapping. By facilitating interpersonal interactions, a continuation of economic activities by supporting work-from-home arrangements and direct payment to workers as well as of social security for crisis relief, ICT helped ease the suffering to some extent.

In recent decades there has been increased emphasis on genetic and genomic epidemiology, involving single gene studies to high-throughput genome-wide- sequence-expression and epigenomic approaches to understanding human health and disease. During the pandemic genetic sequencing for identifying virus variants as they appear so that timely measures can be instituted has been acknowledged as a significant tool. The genome-wide approaches seek information on the complete genetic make-up, thus improving our understanding of disease etiology, risk, diagnosis, treatment or prevention in the studied families or the population. Can such modern medical-biological knowledge be harnessed for precise and personalized diagnosis and possible therapeutic intervention? The challenge in public health health-related R&D in India is in generating high-throughput testing methodologies and most modern interventions, which are not only specific and sensitive but also cost-effective and affordable.

It would not be out of place to mention that in the traditional health systems such as Ayurveda, Siddha, Unani, SowaRigpa, the concept of personalized and precision medicine is inherent to the practice pursued for centuries. Emerging knowledge and technologies in genomics for the benefit of population health, and its application in the context of Prakriti patterns and metabolic status, as understood in the traditional Indian system of Ayurveda, has

the potential to widen the outreach and bridge this gap in public health genomics ([Prasher et al. 2016](#)).

As with COVID-19, there are several conditions that we do not fully understand yet but, while uncertainties abound, we have multiple avenues for prevention and treatment. 'Rare diseases' and other genetically determined disorders fall within such tricky domains. There are counselling based simple solutions for the prevention of several genetic disorders, that need to go hand in hand with the use of efficient high-throughput technologies; and researching of alternative simple cost-effective and effectual high-throughput methods in field situations. Experience suggests that even guidance with empathy does heal a helpless seeker for treatment of their child stricken with a rare disease, or in geriatric age problems for wellness in health care. Thus, we need to balance, what, where and how the healthcare needs are attended to.

Not only in China but also in several other countries including India, knowledge systems other than conventional bio-medicine have contributed to the COVID response. From primary prevention to treatment of mild and moderate cases, to adjuvant support in severe cases, efforts have been underway and their documented evidence on efficacy needs to be seriously assessed for designing more integrative approaches to health care ([Sendhilkumar and Manickam 2020](#); [Rammanohar 2020](#)). Claims of all systems need to be assessed with an appropriate evidence base and a level playing field to build on the best of all knowledge available for the future.

Health technology assessment has acquired considerable salience in clinical and public health decision making in many high high-income countries, with evidence-based medicine and synthesising reviews providing the knowledge base for expert guidance and consultative decision making ([NICE 2021](#)). The COVID pandemic saw a rapid flurry of repurposing of medicines and the development of vaccines that required clinical trials for assessing safety and efficacy. The urgency of curative and preventive technology adoption led to much contestation about the application of emergency use authorisation for restricted use and the nature of the evidence base essential to do so. Balancing the assessment of benefits and risks in situations of such uncertainty is a delicate public health task. It requires not only the evidence on efficacy and safety but also a consideration of the health service delivery capacities and the economic, social and cultural context in diverse settings. Despite the unprecedented widespread attention to the pandemic by scientists, governments and administrations, such holistic analysis was found wanting in the guidance and management of this pandemic ([Klement 2020](#); [Leach 2021](#)).

The limitations of a topdown, centralised, approach to healthcare are well recognised. Yet, Global Health, as the most recent *avatar* of public health in the international arena and pandemic management across countries, revealed the lack of contextual planning leading to huge gaps, resulting in unnecessary loss of health and lives from other problems as well as COVID-19 ([DalGLISH 2020](#); [Priya et al. 2020](#)). Inter-disciplinary health systems and policy research that is rooted in epistemological advances such as of realist theory, complexity theory and others, with the adoption of mixed quantitative and qualitative methods, and innovations in research tools and techniques for multi-level enquiry too has emerged as an acknowledged

entity over recent decades ([AHPSR 2021](#)). On the other hand the practice of Public Health policy, planning and implementation has tended to remain insulated from such theoretical advances even while outcomes of such research are available ([Priya 2018](#)). We need to examine how far these are being employed in the Indian context and with what value addition. How are they changing the structure and functioning of service systems: who benefits from the technological changes, to what extent, at what cost, and who loses out?

Evolutionary biology and the environmental pressures that can be generated by the growing interfaces across species within local eco-systems and across global eco-systems, resulting in something like the COVID-19 pandemic, are essential elements in the understanding of public health causality with a historical and population perspective. Environmental health, Eco-system health, 'One Health' are public health approaches that work with wider frameworks and are fairly developed by now ([IMCAPI 2008](#)). With industrial and agriculture-related pollutants, climate change and zoonoses affecting human health on an increasingly larger scale through known and as yet unknown etiological pathways, they must all receive increasing attention. Addressing environmental health issues through consideration of the three pillars of sustainable development, social justice, environmental integrity and economic viability, can draw upon ongoing research in fields of science and technology studies, sustainability studies and related areas, that have developed inter-disciplinary and trans-disciplinary conceptualisations, methodologies and tools ([Klein 2014](#)). Public health has to play a big role in applying these understandings to human health and health care systems. It has the onus to generate awareness of the larger interlinkages as well as developing institutional systems and networks that can generate such holistic knowledge and ways of translating it into practical implementation and policy approaches.

The challenge today is also to communicate the technical knowledge in simpler language and yet in full complexity, to individuals and the community as well as to clinicians and policymakers. Health seeking behaviours of people, of diverse groups and communities, need to be understood from their perspective rooted in their life conditions and ontologies, to co-construct supportive systems in the spirit of empowering them. Cultures of health care providers need to be similarly understood in their diverse settings and at various levels of health care.

Thus, PH needs to draw from in-depth analytical discipline-based research, both of the biomedical and social sciences, and much research by way of synthesising studies that provide the basis for inter-disciplinary and trans-disciplinary knowledge generation. The MCI curriculum for Community Medicine and most of the MPH courses being run by over 30 institutions across the country, do not accommodate such areas of advance in the scientific paradigm ([Gandhi 2020](#)). Nor are they being addressed adequately in the dominant Global Health discourse internationally ([WHO SEARO 2000](#); [Wright et al. 2000](#)). A significant opening up of PH as a discipline to the contemporary frontiers of the natural, social and applied sciences is essential, in its pedagogy, its research, and its contributions to policymaking. This will require

deepening the disciplinary content and making it more suited to the challenges of the 21st century.

This special issue of Dialogue carries papers that examine these issues from a futuristic perspective using an Indian lens. The first by Qadeer reflects on the history of public health planning in independent India. It identifies strengths of the early years of development planning while also going beyond past analyses to pinpoint, within the plans as well as in the larger socio-political context, the reasons for lack of their adequate implementation. Drawing on these learnings for the decline of public health in India, it re-emphasises the attention to structural inequalities and poverty for rebuilding public health. It reminds the reader that improving the health of the population with medical technology inputs given as welfare can be counter-productive if the basic conditions of life remain unaddressed. The economic impacts of the pandemic certainly require bringing these considerations back centre-stage.

The second paper by Sahay *et al.* examines the use of ICT for pandemic control activities to analyse how its use in public health can increase the efficiency of the system, empower the users and support decentralised approaches. ICT is presently viewed by Public Health practitioners as a utilitarian tool for improving service systems, without examining its characteristics and their implications. This paper reveals how the design and purposive use of ICT can be highly diverse and thereby needs close understanding and attention.

The third paper by Bamezai discusses the development of public health genomics, the need for its improvisation as simple and cost-effective technology, and suggests a two two-track approach to health services development wherein the benefits of OMICS research can reach people through public health services from primary to tertiary levels of care.

The fourth one, by Das, presents the relevance of the 'complex adaptive systems' approach for public health, illustrated through the experience of responses to COVID-19. It underlines the use of such an approach for more realistic policy and planning to minimise the gaps reflected through their intended and unintended outcomes.

The fifth paper by Unnikrishnan discusses how the pluralism of knowledge systems in the Indian health system can be a source of resilience. It discusses the initiatives taken during the pandemic to develop the AYUSH systems' potential for public health, which is likely to continue being strengthened in the post-COVID period. It suggests that the 'whole systems approach' be adopted for AYUSH research, and combining this with the complex adaptive systems approach will be a strong contribution to Public Health.

The last paper by Priya argues the need for a theoretical frame to facilitate bringing the various strands and streams of Public Health into a shared thinking space that can potentially lead to a greater blending of concepts and approaches. It suggests Critical Holism as such an overarching frame that would require all Public Health research, policy and planning to relate

itself to the multi-level, multi-dimensional contours of its subject matter and locate itself within that whole.

This set of papers, we hope, will contribute to a wider discussion on the need for deepening of Public Health content and how to move towards it for the contemporary Indian context.

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