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

COMMENTARY

Indian Plural Health System and Resilience: Lessons from COVID-19

Unnikrishnan Payyappallimana

Visiting Professor, University of Transdisciplinary Health Sciences and Technology, 74/2, Jarakabande Kaval, Post Attur via Yelahanka, Bengaluru - 560064 India

https://tdu.edu.in/faculty/unnikrishnan/

DIALOGUE
Science, Scientists, and Society

Table of Contents

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

COMMENTARY

Indian Plural Health System and Resilience: Lessons from COVID-19

Unnikrishnan Payyappallimana

Visiting Professor, University of Transdisciplinary Health Sciences and Technology, 74/2, Jarakabande Kaval, Post Attur via Yelahanka, Bengaluru - 560064 India

https://tdu.edu.in/faculty/unnikrishnan/

Email: unnipm@gmail.com

Keywords. AYUSH; Pluralism; Public health; Pandemic; Health policy

Abstract. Beginning with a brief recent history of plural health systems in the Indian context, this is a commentary on the idea of resilience from the perspectives of AYUSH and local health traditions (LHTs) as witnessed historically and during the COVID pandemic. By narrating the AYUSH systems' experiences during COVID-19, in providing health care and in attempts at building rigorous research and evidence, it examines their potential future engagement in the public health scenario in the country. The article contextualizes the potential core functions of plural and integrative health systems for the resilience of the Indian health system.

PERSPECTIVES ON PLURALISM IN INDIA

Discussions about medical pluralism or plurality in healthcare in India have centered around two main vantage points: *viz.,* pluralism as a long-prevailing phenomenon in healthcare; and pluralism as co-opted and defined by the state and its health system policies. From the introduction of the idea of medical pluralism in social science literature in the 1970s and the works of eminent anthropologists like Charles Leslie, pluralism in India has been defined and discussed in multiple ways by anthropologists, sociologists, health system researchers, policy

analysts and others. Many of these early works have focused more on the socio-cultural aspects of popular culture and less from a healthcare system policy perspective. Yet they have dominantly explored other knowledge systems by contrasting them with biomedicine.

Over the years, the relevance of pluralism of knowledge systems in India's health system has been a matter of debate. One of the major arguments has been that pluralism exists in many developing countries including India due to the limitations of the dominant allopathy-based health system i.e., inadequate mainstream health infrastructure, lack of access, quality of care, etc. In this context, the wide presence of traditional medical systems has also been viewed as 'forced pluralism' (Sheehan 2009). Another related view is that pluralism is a product of multiple notions of efficacy, cure and care among the population emerging from their cultural ignorance. The need for metaphysical, psychosocial and spiritual dimensions of healthcare are not served by allopathy and hence other systems which have the potential to address them are in demand.

On the other hand, some views acknowledge the inherent value in pluralism, that it is a product of limitation in clinical aspects of allopathy in the outcome of diseases that elude medical systems (Sujatha and Leena 2009). They go on to say that the presence of Indian systems of medicine generated and sustained through a long historical path is the lived experience of the population and this has led to a constant popular culture of integration. By quoting Gupta's (Gupta 1988) idea of 'overlapping instrumentalities' they further say that the public swiftly integrates various systems. The socio-political power of the Indian Systems of Medicine (ISMs) from the period of All India Ayurveda Congress during British rule, as well as region-specific legitimacy; the growing market of ISM medicines; the power of nationalistic and cultural ideologies have all been cited as driving forces of sustenance of pluralism. Pluralism is not a fact exclusively in developing countries, and integration of multiple practices along with the revival of the past can also be viewed as a counter-current to modernity (Sujatha and Leena 2009).

This range of analytical perspectives is also reflected in the various ways in which pluralism has been dealt with in policy practice. It is important to examine how this has evolved over the years, so as to contextualise its present role, including during the COVID-19 pandemic.

HISTORICAL CONTEXT OF PLURALISM IN POLICY

Priya 2012 notes that Indian policy approaches to pluralism have had significant asymmetry leading to an 'undemocratic pluralism' across the systems. By comparing various early post-independence health services related committee reports Priya 2005 points out that the Bhore committee appears to have taken a western model centered view of development, an approach in coherence with Nehruvian thought; the Chopra committee adopted a revivalist model; while the Indian National Congress's Sokhey committee's people-centred, pluralistic approach reflected a Gandhian model. Others who have worked on the Indian systems of medicine

including local health traditions say that the 'selective systematization and knowledge extrusion' of certain traditional medical practices by the State should be studied systematically from the perspective of 'an intracultural discourse about medical pluralism expressive of an exclusive vision of modernity' (Lambert 2017). Some others have argued that there is fragmentation in the current health policy planning creating silos of different medical streams. The idea of pluralism suggests the need to develop a common, strategic and focused health research agenda aligned to emerging national needs. For this considerable investment is required for integrative clinical research, education and practice (Shankar and Patwardhan 2017).

Though there were several narrations of the divide between medical systems from the mid-19th century, the distinction between medical systems or formally trained (and registered) medical practitioners and the traditional carriers of healthcare expertise with social legitimacy were often blurred until the early decades of the 20th century. The distinction became pronounced with the introduction of the Indian Medical Degrees Act 1916.[1] This Act had the objective of bringing western medical education under an Imperial Act to supplement the provincial governments' acts. It defined 'western medical science' as 'the western methods of allopathic medicine, Obstetrics and Surgery, but does not include the Homeopathic or Ayurvedic or Unani system of medicine.' This act specifically stated that it does not prevent any other system from being practised but the practitioner cannot claim authority in a system in which the person is not trained.

The celebrated Bhore committee report in 1946 was the first national report of health sector planning in India. Despite the fact that the presence of multiple medical streams and the need for their integration appeared in different planning committee recommendations (Chopra, Dave, Udupa, Mudaliar, Pandit committees, etc.), it took nearly three decades after the country's independence for plurality to get a manifest space within national planning. The Indian Medicine Central Council Act, 1970 created a national council to regulate Ayurveda, Siddha, and Unani medicine, set minimum standards for education, and maintain a register of all practitioners in these systems. Yet their role in healthcare was not made explicit.

In 1981, shortly after the Alma Ata declaration was promulgated in Kazakhstan in 1978, the Indian Council of Medical Research (ICMR) and the Indian Council of Social Science Research (ICSSR) jointly formed a committee under the leadership of Prof. V. Ramalingaswami and came out with a report 'Health for All - An Alternative Strategy,' a novel approach for the integration of indigenous medical systems in India's health system planning. This report called for an alternative model of healthcare services that had a strong component of 'indigenous systems of medicine' as the stream was enunciated then. In a way, this was radically shifting the focus from their marginalization since independence to a new, inclusive, and pluralistic perspective. This along with the spirit of the Alma Ata declaration formed the

[1] See http://www.bareactslive.com/ACA/ACT731.HTM#2. Acts of the Local Council provide in many of the larger provinces of British India for the registration of persons duly qualified to practise western medicine or surgery, and where such Acts have been passed, Medical Councils have been constituted with specific powers and duties. It is now considered necessary to supplement this provincial legislation by an Imperial Act, restricting the right to issue degrees and diplomas in these systems of medicine and surgery to duly constituted authorities, so as to ensure that such degrees and diplomas are not issued to unqualified persons…"

basis for the National Health Policy which, in 1983, called for a people-centred, participatory health system, and also pronounced the role of the Indian systems of medicine in the health sector.

In 2002 a first national ISM policy was also drafted along with the second National Health Policy. Significant efforts were made to mainstream the formally recognised Indian Systems of Medicine. For the first time, this document also gave space to the local health traditions, the community and ecosystem specific oral traditions, the informal and non-institutionalized, non-codified knowledge. This component of the pluralism had been marginalised in the past by a shift in policy nomenclature from 'indigenous medicine' to Indian Systems of Medicines (ISMs). Concerted efforts by civil society organizations across the country towards the revitalization of local health traditions in the 1980s and 90s also formed the basis for this recognition. Following the 2002 NHP, ISMs found space in the National Rural Health Mission launched in 2005. It had a key operational strategy of mainstreaming AYUSH and revitalising local health traditions in formal health systems through co-location of allopathic and AYUSH health services (NHSRC 2009). The ASHA workers who formed a prime focus of the National Rural Health Mission (NRHM) were expected to have basic orientation in the use of medicinal plants and traditional formulations. Subsequently, the 11th and 12th five-year planning periods saw significant elaboration on the integration of ISMs in the national planning with increased allocation of resources. This decade also saw another change in nomenclature of the ISMs as AYUSH (ayurveda, yoga and naturopathy, unani, siddha and sowa-rigpa and homeopathy), the institution of a department of AYUSH and unique efforts such as starting of the North Eastern Institute of Folk Medicine to support the local health traditions. The formation of separate research councils and national institutes for each of the AYUSH systems during this period brought out distinct identities for non-ayurveda streams within ISM and a new policy import to pluralism. Several subsequent national planning reports had an augmented focus on AYUSH. For instance, the Planning Commission's high-level expert group on universal health coverage in 2011 laid significant emphasis on AYUSH systems.

Later, in 2014, a separate Ministry of AYUSH was instituted. The National Health Policy 2017, had pluralism as one of the ten core principles of Indian health systems. With respect to mainstreaming different health systems, it called for 'increased validation, evidence and research of the different health care systems as a common pool of knowledge.' Further, it said, 'Providing access and informed choice to the patients, providing an enabling environment for the practice of different systems of medicine, an enabling regulatory framework and encouraging cross referrals across these systems' (NHP 2017). Yet a cautious restraint and dominance of allopathy are palpable in these documents. NHP 2017 says on Pluralism that, "Patients who so choose and when appropriate, would have access to AYUSH care providers based on documented and validated local, home and community-based practices. These systems, inter alia, would also have government support in research and supervision to develop and enrich their contribution to meeting the national health goals and objectives through integrative practices." It is noteworthy that local health traditions are mentioned only

in the context of certification of community health providers and conservation and cultivation of medicinal plants (NHP 2017).

Thus, while over the decades, significant visionary policies have come about in terms of strengthening pluralism in the country, divergent views, as well as lack of sensitivity and appreciation, are still visible among the health planners and administrators. In the NITI Aayog action agenda of recent years, there is insufficient attention to the importance of mainstreaming AYUSH. A NITI Aayog document in November 2019, titled "Health System for a New India: Building Blocks" has only 2-3 references to AYUSH systems one of which reads "government policies have contributed to the expansion of AYUSH providers, especially by integrating them into government-run *allopathic care practices*." A dominant hierarchical pluralism is palpable in this phrasing. However, in an attempt to take the process of integration forward, the NITI Aayog has also set up working groups for the recently announced NITI Aayog plan to develop 'One India One Health.' This may be a major transformation towards building integrated health systems in the country with a stronger focus on pluralism.

COVID-19 AND AYUSH SYSTEMS' EXPERIENCES

While the policy developments in the last two decades (with respect to AYUSH) have been quite supportive of pluralism, the pandemic has revealed continuing challenges related to the integration of AYUSH in the public health programs in the country. The following section analyses recent developments and their implications.

The pandemic, in general, gave rise to some fiery debates between medical systems. Responding to media outcry against the use of AYUSH for the pandemic, several articles critical of the alienation of AYUSH systems have been published (Priya and Sujatha 2020; Chaturvedi et al. 2020; Payyappallimana 2020a). They raised concerns about public health needs and the potential of AYUSH based on the role that AYUSH systems have played traditionally and the epistemological strengths of these knowledge systems. The contested ideas of health institutions and their relevance; disease nomenclature (fevers, immunity, epidemics); medicines, their safety and efficacy; AYUSH practitioners' role as workforce for health care in the COVID first-line treatment centers; debates between professional associations; contestation of compassionate use/repurposing of allopathy medicines based on emergency use while denying similar latitude to AYUSH are issues that have highlighted the challenges to the agenda of integration. Simultaneously, various potential pathways have opened up as well.

Epidemic response as a strategy is outlined in the classical texts of Ayurveda. The narrations of various forms of mass pathogenesis (especially in terms of multiple dimensions of manifestations), emergency responses like exploring safer places, developing potentiated medicines, hygienic measures, prevention and coping including bio-psychosocial dimensions are well explained in the oldest classical text, the *Caraka Samhita*. "In Ayurveda the

determinants of health are biological, ecological, medical, psychological, sociocultural, spiritual and metaphysical factors, all interdependent and wired together by the common concept of relationship. The harmonization and integration of these determinants in a complex system allows the emergence of what is identified as health." (Morandi et al. 2011). Ayurveda's holistic conceptual approach to *svasthya* (Wellness) stems from the premises of the interrelatedness of outer (*loka*) and inner worlds (*purusha*) of existence as evinced in the way Ayurveda and various local health traditions approach *svasthya* in the context of ecosystems, geography, culture, seasons, dietary diversity among several other factors (Morandi et al. 2011). The descriptions and commentaries on epidemics (*Janapadodhvamsa*) in the classical literature of Ayurveda also portrays how social aspects of governance and destruction of environmental and social ecosystems can lead to morbidities on a population scale (Payyappallimana 2020b).

Yet in terms of translating this into a public health preparedness strategy, over the past century, Ayurveda has neither been on a level playing field nor have there been concerted efforts from the AYUSH community to contribute to public health goals at scale. Despite some local interventions during epidemics being on record during the 19th and early 20th centuries, AYUSH systems have mainly remained in their medical-clinical roles with little contribution to public health. In the current pandemic a series of policy responses have opened up the potential of AYUSH, and this has brought these systems face-to-face with challenges of the AYUSH systems.

In the early days of the pandemic in India, on January 29, 2020, the Ministry of AYUSH of the Government of India pro-actively released an advisory for prevention and protection from the pandemic based on the guidance of various AYUSH research councils. [2] This was well before the Ministry of Health and Family Welfare came out with any advisories. However, in March the state governments started releasing specific advisories based on allopathic understandings without any credence to the role of AYUSH. The Government of Kerala brought out an advisory that patients at all AYUSH hospitals should be discharged and that emergency patients should be referred to a nearby 'medical institution' (23rd March 2020). It said no patient with fever or respiratory infection should be treated at AYUSH centers. East Delhi Municipal Corporation, in an office memorandum, listed the AYUSH department under 'non-essential departments' during the lockdown (but this listing was later reversed). These clearly point to the fact that state-supported medicine continues to be dominated by allopathy with denial of the potential role of AYUSH.

In parallel, overenthusiastic, indiscriminate responses from AYUSH practitioners and producers of AYUSH medicines led to some notifications (on 28th March) from the Ministry of AYUSH that unsubstantiated claims from AYUSH sector will be dealt with strictly. [3] One of the notifications said that AYUSH medicine producers could utilize their resources towards producing essential items like sanitizers. The National and State level Ministry of AYUSH related task forces were set up mostly independently without much consideration to health

[2] https://www.pib.gov.in/PressReleasePage.aspx?PRID=1714205

system integration or interlinkages within the care delivery machinery. National protocols for prevention, mitigation and post-COVID management; National guidelines for care for AYUSH physicians were published by the Ministry of AYUSH, however, the State responses were varied. The state of Kerala, which boasts a well-recognized pluralistic health system, still maintains a hard position of prohibiting the usage of Ayurveda for curative care in COVID-19. However state-wide prophylactic measures based on Ayurveda were promoted (Golechha 2020) through the Amurtham, Sukhayushyam and Punarjani programs (Chandna 2020). The project Amritham is for giving preventive medicines to those in quarantine. All government Ayurveda dispensaries and hospitals will provide this facility. 'Sukhayushyam- a caring touch to the tired hands,' a programme envisaging physical, psychological and emotional support to the old age population is being implemented. Swasthyam is a program to strengthen the individual protection against COVID-19 among various classes of the population below the age of 60 considering the intensity of risk to exposure. Nirmaya is an online portal connecting all government Ayurveda facilities in the state that has been conducting online consultations as well. Punarjani is a convalescent care programme - this is specific ayurvedic management for cured COVID-19 patients in the recovery phase after the mandatory isolation of 14-days after discharge from hospital. The state of Kerala's geriatric population is around 12.5 per cent and faces challenges of both co-morbidities and ageing-related complications. These programs have been popularized during the first wave in 2020 and during the second wave in 2021. The motto of the Kerala government's Ayurveda action plan is "*Karuthalode Keralam, karuthekan Ayurvedam*" which means "Ayurveda can protect Kerala." Apart from government institutions, local self-government, private colleges, hospitals, large organizations such as the Ayurveda Medical Association of India, are also actively part of the programs in every district across the state (Joseph et al. 2021).

On the research front, the Ministry of AYUSH formed an Interdisciplinary AYUSH R&D task force having representation from scientists including the Indian Council of Medical Research (ICMR), Department of Biotechnology (DBT), Council of Scientific and Industrial Research (CSIR), All India Institute of Medical Sciences (AIIMS) and AYUSH Institutions. There were also specific national guidelines brought out. It was made mandatory that AYUSH medicines were to be tested on exactly similar models to that of allopathy for any claim to be made regarding their efficacy. Over 150 AYUSH Clinical trials were registered on Clinical Trials Registry – India (CTRI) during a short period in an impulsive drive to develop evidence, yet, there have been limited outcomes of those studies so far.[4] Clinical experiments were initiated in different institutions including the All India Institute of Ayurveda for curative management of COVID-19 patients, and their results are still awaited. As the number of patients rose, many Ayurveda private practitioners have been managing patients in which curative care elements have been highlighted (Joshi and Puthiyedath 2020). A detailed account of the one-year Initiatives of the Ministry of AYUSH was recently published (Kotecha 2021). There have been discussions around the need for Practice-Based Evidence (PBE) as against Evidence-Based Medicine (EBM)

[3] https://pib.gov.in/PressReleseDetailm.aspx?PRID=1609523

and the need for whole system research (Payyappallimana et al. 2020c). A recent *PLOS Medicine* editorial byGreenhalgh 2020 criticizing the current disarray in COVID-19 research, says "It is surely time to turn to a more fit-for-purpose scientific paradigm. Complex adaptive systems theory proposes that precise quantification of particular cause-effect relationships is both impossible (because such relationships are not constant and cannot be meaningfully isolated) and unnecessary (because what matters is what emerges in a particular real-world situation)." Based on this, Ayurveda researchers have argued that practice-based evidence and complexity research approaches are the primary methodologies of Ayurveda and the conventional research needs to be supported by whole system research which is more appropriate for traditional systems (Payyappallimana et al. 2020c). Patient management according to Ayurveda is multimodal, planned in the clinical context based on detailed profiling based on patient characteristics, disease stage, severity among others. Management is customized according to patient needs and not based on linear modern pharmacotherapeutics based on the specific biological mechanism or a single target. Such a holistic clinical approach requires novel methodologies for clinical trials.

There have also been considerable efforts to apply the scientific rigour of Ayurveda and this has showcased the potential for evidence-based integration. Detailed Ayurvedic profiles of COVID-19 infection and different treatment protocols have been published by various institutions (Puthiyedath et al. 2020; Rastogi et al. 2020; Rastogi and Singh 2020; Talwar et al. 2020). As indicated earlier, selected drugs are undergoing clinical trials in different centers across the country (Tillu et al. 2020). *In-silico* studies have been carried out on various potential drug candidates (Gandhi et al. 2020; Borse et al. 2020; Chikhale et al. 2020; Maurya and Sharma 2020; Priya Shree et al. 2020). There are also efforts for whole system research and standalone management trials of ayurveda curative management (Payyappallimana et al. 2020c). Similar efforts have been reported from Siddha, Unani, Homeopathy, Yoga, Swa-rigpa as well.

The AYUSH sector is trying hard to challenge the long-standing idea right from the period of Bhore Committee that "public health or preventive medicine was not within the purview of indigenous systems, nor did these systems deal adequately with such vital parts of medical practice as obstetrics and gynaecology, advanced survey and some of the specialties." (Mudaliar report [5] in quoting Bhore committee). This view had become dominant and created challenges with respect to the self-esteem and sense of worth within the AYUSH practitioners, which is gradually being overcome.

In this quagmire LHTs and their carriers, which have huge potential in terms of building local community coping and resilience, have received limited attention in these discussions. At the same time, local cultural knowledge of usage of simple home remedies as daily preventive and promotive practices has been included in the official national and state advisories of AYUSH. Some state governments like Chhattisgarh have involved local communities and their healers

[4] See http://ctri.nic.in/Clinicaltrials/login.php

[5] Report of The Health Survey and Planning Committee (Mudaliar Committee) (August 1959 - October 1961) Vol. 1http://14.139.60.153/handle/123456789/5615

for promoting community-based enterprises and to support the production of some preventive herbal medicines thus engaging not just in health but also community livelihood activities.

On the flip side, this pandemic has created a major change in the public perception of AYUSH with an increase in the popularity of these systems in response to the pandemic. On the other hand, it has also prompted the AYUSH systems to systematically engage in a public health approach for prevention, mitigation, and post-COVID care.

Like modern medical systems, due to the limited understanding or imagination of the magnitude of the problem, it took a while for AYUSH to prepare. Currently, there seems to be a better appreciation and understanding within the Ayurveda community regarding public/population/community health. This has also prompted more interdisciplinary thinking within the AYUSH community. There is a growing understanding of the socio-economic and environmental determinants and their interconnectedness in diseases, health or wellness within the community. With the unprecedented pandemic, the already growing appreciation of the interrelatedness of human health and animal and environmental health, defined as 'One Health' currently has got much fillip. This has definitely also flagged methodological opportunities of systems thinking, transdisciplinarity, problem-based social learning among others. Ayurveda historically had expanded the scope beyond human health with *mrigayurveda* (animal health) and *vrikshayurveda* (plant health) being part of a vast literature over a span of nearly three millennia and its extensions into popular practice. While these are not exact parallels there are conceptual similarities in the approaches to these emerging perspectives. Though this may sound quite far-fetched in terms of current thinking in Ayurveda, this offers a broad, new prospect for Ayurveda's engagement. This should result in a better appreciation of the potential of AYUSH in the approach towards the wider ecosystem factors as well.

The pandemic has opened up multiple research areas for AYUSH and LHTs. Yet it has much to learn from the Chinese experience and how swiftly traditional Chinese medicine was integrated into their national management protocols version three (Ni et al. 2020). It is also important to study specifically what has been the impact of government interventions, on the private sector or the civil society for popularizing AYUSH messages. Creating an enabling environment for coexistence through continued constructive dialogue and appreciation of complementary roles is necessary for building an integrative framework. Clear understanding is required with regard to points of convergence and divergence between allopathy and the various AYUSH systems and a method to manage those through integrative and standalone frameworks.

It is evident today that the AYUSH perspective of *svasthya* has high relevance for population and public health both in terms of self-care and delivered care. AYUSH and LHTs also have much relevance in focusing on host factors especially the concept of immunity. Understanding and managing co-morbidities, as well as longer term manifestations of the pandemic, is yet another area of long-term interest. There is a huge potential of LHTs as the base of the health system with its proximity to millions of communities and their localized experiences. This is

being argued as a 4th tier of our health system towards building population self-reliance (Mathpati et al. 2020).

The Pandemic and Resilience in the context of AYUSH and LHTs

There is much discussion today on the concept of resilience in health systems, especially in the context of epidemics and pandemics. While this has been more commonly used in fields like ecology, resilience has become a buzzword in health systems research as well. "A resilient health system is one which is able to effectively prepare for, withstand the stress of, and respond to the public health consequences of disasters" (Kruk et al. 2015) Some basic principles and values around resilience in health systems relate to being: aware; diverse; self-regulatory; integrated; and adaptive. Typically, resilience is applied to complex adaptive systems on the whole not to a specific element within the system (Kruk et al. 2015). However, the resilience lens is a good approach to examine plurality as a character of the health system. Also relevant is applying the lens to examine how AYUSH systems and LHTs have faced the historical socio-political challenges and the epidemiological challenges of changing health conditions and disease patterns, including during the current challenge of the COVID-19 pandemic.

Historically AYUSH and LHTs have been adaptive and resilient in their experience of marginalization and contestation of a legitimate space. It is well known that during the colonial period indigenous medicines were the first response as colonial healthcare was confined to urban areas and military cantonments. Before the present institutionalization, in the ways they were defined and treated as 'indigenous' and 'Indian systems of medicine' over respective periods, they managed to survive and served mostly through social and community resources for health system contributions, demonstrating their own resilience. Further, this plurality as a response to public demand and expectations has to be viewed as a property of the system that gives it resilience. Through various ways, these systems have survived and met this popular demand.

During the present pandemic, the public demand for these systems grew, especially for prophylactic and immunity strengthening purposes (Perappadan 2020) and this has been addressed through mostly informal interventions, self-care and civil society interventions. The Ministry of AYUSH also took various measures to promote prophylactic practices as a national campaign. [6] It is important to study how effectively such interventions have contributed to the protection of human life and the production of good health. Though in the initial days of the pandemic AYUSH institutions were not allowed to function in other care areas, the situation was restored to an extent and they were able to deliver core functions through public and private institutions more than before, albeit with limitations. The pandemic experience also seems to have enhanced an orientation towards public health and mass application strategies within the AYUSH community. If this could be sustained in the post-pandemic period,

capitalizing on the 'resilience dividend' of these systems would strengthen the Indian health system.

Resilience has much to do with the context and it is dynamic. It is important to have a people-centred approach also from within the AYUSH community. There is a strong need for AYUSH to support and strengthen the fourth tier of health systems as outlined recently by some researchers for it to strengthen a people-centred participatory approach. One of the main challenges that have emerged within the ayurveda community is the role of non-government and private actors at different levels. There is also the need for better stakeholder participation and understanding the roles and responsibilities of multiple actors within the community. Currently, the civil society and private sector are acting based on their own convictions. Better integration of these in formal systems with flexibility and rigour, sharing of resources, and so on might offer better health outcomes.

It is equally important to ask what the global community can do for AYUSH in India and its better integration. There has not been sufficient attention from international institutions towards strategic integration of traditional medicinal practices in the pandemic. In the WHO mid-term strategy report last year 128 WHO member countries recently reported (2019) strong national policies, however collective action on traditional, alternative and integrative healthcare has been missing during the pandemic. AYUSH should be promoted as a global public good for such situations and there should be more collective global response.

CONCLUSIONS

Finally, the public health landscape is changing at a fast pace and the pandemic will open up several new avenues in the global and national strategies. Sustainability discussions are likely to have a stronger impact not only in terms of appreciation of plurality or multiple world-views but also in terms of multiple drivers and determinants of health and health systems. Thus interactions between the 'whole systems approach' of AYUSH and the complex adaptive systems understanding of health systems research are likely to be of immense benefit for health care.

[6] See https://www.mygov.in/campaigns/ayush/

References

1. Sheehan, H.E. 2009. Medical pluralism in India: patient choice or no other options? Indian J Med Ethics. Jul-Sep;6(3):138-41. doi: 10.20529/IJME.2009.045. PMID: 19653589.
2. Sujatha, V., and Abraham, L. 2009. Medicine, State and Society. Economic and Political Weekly, 44(16), 35-43. Retrieved December 31, 2020, from http://www.jstor.org/stable/40279154
3. Gupta, Dipankar. 1988 For a Sociology/Anthropology of Illness: Towards a Delineation of Its Disciplinary Specificities, International Sociology, Vol 3(4), pp 403-13.
4. Priya, R. 2012. AYUSH and Public Health; Democratic Pluralism and the Quality of Health Services in Medical Pluralism in Contemporary India Eds. V. Sujatha and Leena Abraham, Delhi: Orient Blackswan.
5. Priya, R. 2005. Public Health Services in India: A Historical Perspective in Review of Healthcare in India (eds. Leena V Gangolli, Ravi Duggal, Abhay Shukla), CEHAT, Mumbai.
6. Lambert, H. 2017 Health care, hierarchy and the intracultural politics of recognition: Medical pluralism and its narratives as ethnographic objects. L'Uomo, 2017(1), 157-176. https://doi.org/10.7386/89103.
7. Shankar D, and Patwardhan B. 2017. AYUSH for New India: Vision and strategy. J Ayurveda Integr Med, 8(3):137-139.
8. NHSRC. 2009 Mainstreaming AYUSH & Revitalizing Local Health Traditions under NRHM, NHSRC, New Delhi.
9. Government of India, 2017, National Health Policy. https://mohfw.gov.in/sites/default/files/9147562941489753121.pdf
10. Priya R. and V. Sujatha. 2020. Will Traditional Indian Medicine Be Allowed to Contribute to the Fight Against COVID-19? The Wire, https://thewire.in/health/traditional-indian-medicine-ayurveda-siddha-unani-coronavirus-covid-19-pandemic-immunity
11. Chaturvedi, S., Kumar, N., Tillu, G., Deshpande, S., Patwardhan, B. 2020 AYUSH, modern medicine and the Covid-19 pandemic. Indian Journal of Medical Ethics, V (3), 191-195. Retrieved from https://ijme.in/articles/ayush-modern-medicine-and-the-covid-19-pandemic/
12. Payyappallimana, U. 2020a. Doctors at the Borders: Ayurveda's Encounter with Public Health and Epidemics, Society for Cultural Anthropology, June 23, 2020, https://culanth.org/fieldsights/doctors-at-the-borders-ayurvedas-encounter-with-public-health-and-epidemics

13. Morandi A, Tosto C, Roberti di Sarsina P, Dalla Libera D. 2011. Salutogenesis and Ayurveda: indications for public health management. EPMA J 2(4): 459-65.
14. Payyappallimana, U. 2020b. Changing Global Public Health Landscape -The Need for Ayurveda to Reflect and Respond, DOI: 10.13140/RG.2.2.18731.80161.
15. Golechha, M. 2020 Time to realise the true potential of Ayurveda against COVID-19, Brain, Behavior, and Immunity, Vol.87, pp. 130-131, https://doi.org/10.1016/j.bbi.2020.05.003.
16. Chandna. H. 2020 This is Kerala's Ayurveda prescription to fight coronavirus and keep infections down, The Print, https://theprint.in/health/this-is-keralas-ayurveda-prescription-to-fight-coronavirus-and-keep-infections-down/435028/
17. JosephSM, Iyer DS, Pillai RV 2021. Ayurvedic Response to COVID-19 Pandemic in Kerala,India and Its Impact on Quarantined Individuals - A Community Case Study. FrontPublic Health. 2021 Oct 15;9:732523. doi: 10.3389/fpubh.2021.732523. PMID:34722442; PMCID: PMC8554199.
18. Joshi JA, and Puthiyedath R. 2020 Outcomes of Ayurvedic care in a COVID-19 patient with hypoxia - A Case Report. J Ayurveda Integr Med. doi: 10.1016/j.jaim.2020.10.006. Epub ahead of print. PMID: 33071521; PMCID: PMC7553124.
19. Kotecha R. 2021. The journey with COVID-19: Initiatives by Ministry of AYUSH. J Ayurveda Integr Med. 2021 Jan-Mar;12(1):1-3. doi: 10.1016/j.jaim.2021.03.009. PMID: 33812534; PMCID: PMC8011587.
20. Payyappallimana, U., Kishor Patwardhan, Prasad Mangalath, Christian S. Kessler, Rama Jayasundar, Anupama Kizhakkeveettil, Antonio Morandi, and Rammanohar Puthiyedath. 2020c. The COVID-19 Pandemic and the Relevance of Ayurveda's Whole Systems Approach to Health and Disease Management. The Journal of Alternative and Complementary Medicine. Dec.1089-1092. http://doi.org/10.1089/acm.2020.0370.
21. Greenhalgh T (2020) Will COVID-19 be evidence-based medicine's nemesis? PLoS Med 17(6): e1003266. https://doi.org/10.1371/journal.pmed.1003266
22. Puthiyedath, R. Sushila Kataria, Unnikrishnan Payyappallimana, Prasad Mangalath, Vasudevan Nampoothiri, Pooja Sharma, Manish Kumar Singh, Kuldeep Kumar, Naresh Trehan. 2020. Ayurvedic clinical profile of COVID-19 – A preliminary report, Journal of Ayurveda and Integrative Medicine, https://doi.org/10.1016/j.jaim.2020.05.011
23. Rastogi, S., Pandey, D. N., & Singh, R. H. 2020. COVID-19 pandemic: A pragmatic plan for ayurveda intervention. Journal of Ayurveda and integrative medicine, S0975-9476(20)30019-X. Advance online publication.https://doi.org/10.1016/j.jaim.2020.04.002
24. Rastogi, S. Ram Harsh Singh. 2020. In the context of COVID-19 and Ayurveda: Few quick

takeaways India may wish to have, Annals of Ayurvedic Medicine Vol-9 Issue-2 Apr.-Jun., 2020.

25. Talwar, S., Sood, S., Kumar, J. et al. 2020. Ayurveda and Allopathic Therapeutic Strategies in Coronavirus Pandemic Treatment Curr Pharmacol Rep **6,** 354–363 (2020). https://doi.org/10.1007/s40495-020-00245-2
26. Tillu, G. Sarika Chaturvedi, Arvind Chopra, and Bhushan Patwardhan. 2020. Public Health Approach of Ayurveda and Yoga for COVID-19 Prophylaxis, The Journal of Alternative and Complementary Medicine. May 360-364.http://doi.org/10.1089/acm.2020.0129
27. Gandhi, Abhay Jayprakash. Jalpa Deepak Rupareliya, V.J. Shukla, Shilpa B. Donga, Rabinarayan Acharya, An ayurvedic perspective along with in silico study of the drugs for the management of SARS-CoV-2, Journal of Ayurveda and Integrative Medicine, 2020 https://doi.org/10.1016/j.jaim.2020.07.002.
28. Borse, S et al., 2020 Ayurveda botanicals in COVID-19 management: An in silico- multitarget approach, DOI: 10.21203/rs.3.rs-30361/v1
29. Chikhale et al. 2020 In-silico investigation of phytochemicals from Asparagus racemosus as plausible antiviral agent in COVID-19, Journal of Biomolecular Structure and Dynamics, 24 Jun 2020, https://www.tandfonline.com/doi/full/10.1080/07391102.2020.1784289
30. Maurya, D. K., and Sharma, D. 2020. Evaluation of traditional ayurvedic Kadha for prevention and management of the novel Coronavirus (SARS-CoV-2) using in silico approach. Journal of biomolecular structure & dynamics, 1–16. Advance online publication. https://doi.org/10.1080/07391102.2020.1852119
31. Priya Shree, Priyanka Mishra, Chandrabose Selvaraj, Sanjeev Kumar Singh, Radha Chaube, Neha Garg & Yamini Bhusan Tripathi. 2020. Targeting COVID-19 (SARS-CoV-2) main protease through active phytochemicals of ayurvedic medicinal plants – Withania somnifera (Ashwagandha), Tinospora cordifolia (Giloy) and Ocimum sanctum (Tulsi) – a molecular docking study, Journal of Biomolecular Structure and Dynamics, DOI: 10.1080/07391102.2020.1810778
32. Ni L., Yuan W., Chen L., Han C., Zhang H., Luan X., Zhao Y., Xu J., Chen H. 2020. Combating COVID-19 with integrated traditional Chinese and Western medicine in China. Acta Phram. Sin. B. 10(7):1149–1162.
33. Mathpati, M. M., Unnikrishnan Payyappallimana, Darshan Shankar, John DH. Porter, 2020 Population self-reliance in health' and COVID-19: The need for a 4th tier in the health system, Journal of Ayurveda and Integrative Medicine, ISSN 0975-9476, https://doi.org/10.1016/j.jaim.2020.09.003.
34. Kruk ME, Myers M, Varpilah ST, Dahn BT. What is a resilient health system? Lessons from Ebola.

Lancet (2015) 385(9980):1910–2. doi:10.1016/S0140-6736(15)60755-3.

35. Perappadan, B.S. 2020. Consumption of ayurvedic medicines/products up during pandemic: Ayush Ministry, The Hindu, September 24, https://www.thehindu.com/sci-tech/health/consumption-of-ayurvedic-medicinesproducts-up-during-pandemic-ayush-ministry/article32686548.ece