**Capacity Building for combating Covid 19 Pandemic and beyond: Ethical considerations**

S N Sarbadhikari and K B Pradhan

Chitkara School of Health Sciences, Chitkara University, Punjab 140401

Email: [supten@gmail.com](mailto:supten@gmail.com)

* ***The submission is not under consideration for publication in any other journal.***
* ***Details of sponsorship or relevant competing interests, financial or otherwise: None.***

**Abstract**

Strengthening of the health system is an ethical imperative, especially in a crisis as caused by the ongoing Covid 19 pandemic. While there is a need for enhancing the number and skillsets of the public health professionals, especially the frontline workers, it will be prudent to utilize the digital health technologies, including Artificial Intelligence, in enhancing the capacity of the health care professional education and delivery. However, it has to be ensured that an ethical approach is adopted to utilize digital health technology to enhance the capacity of the human resources for health, leading to an overall health system strengthening.

**Background**

Strengthening of the health system is an ethical imperative (1), especially in a crisis as caused by the Covid 19 pandemic. That will require significant improvement of policy, education and implementation or delivery – across all the areas.

**Ethical issues with Human Resources for Health Professional Education and Delivery**

In India, the conventional health professional education regulators like the MCI (2) or the NBE (3) have hardly lived up to their ethical responsibilities.

Also, as pointed out earlier (1,4), there is a significant crunch in health human resources in India. As evident from the second joint statement by the public health experts from India (5), it will be prudent to scale up public health rapidly (including medical care) – both for services; as well as, education and research. This has to be done both judiciously and ethically. Otherwise, the accountability may not be there and the blame for any mismanagement will be passed on and on to unrelated personnel – most often the frontline workers.

**Technology-enabled systems as Ethical Guides / Facilitators**

One of the ways to overcome health human resource crunch is to use the telemedicine and tele-education facilities. It is very heartening to note that, during the ongoing pandemic, India has released the Telemedicine Practice Guidelines 2020 for modern medicine (6), AYUSH (Ayurveda, Unani and Siddha) (7) and Homoeopathy (8).

There have been various other applications of technology or digital health interventions for fighting against the ongoing Covid 19 pandemic (9). In the present day of ubiquitous social media amplification of information, communication in a useful and harmless way is becoming very difficult (10). However, technology, if used judiciously, can be more beneficial than harmful. Here are a couple of examples.

Bluedot has developed an outbreak risk software (11), based on Artificial Intelligence (AI), which can help in handling exposure and spread of infectious diseases like Covid-19. Bluedot helps answer important questions regarding the report of local cases, and the severity, in various countries. They provide real time insights to users with Covid-19’s movements, strengthening the security of human health. They had been able to predict the genesis of the pandemic even before the WHO had declared it.

The World Health Organization has created a repository of about more than 5000 peer-reviewed and curated research articles on many aspects including epidemiology, clinical features, diagnosis, treatment, social factors, as well as economics. IIIT Delhi researchers (12) have developed and applied the Artificial Intelligence (AI) technique of NLP (Natural Language Processing), on this massive literature, and have been able to discover the direct effects of COVID-19 and also many systematic implications like the anticipated rise in TB and cancer mortality due to the non-availability of drugs during the export lockdown. This helps users understand, synthesize, and take pre-emptive action with the available peer-reviewed evidence on COVID-19.

However, often technology in general, and AI in particular, are viewed to have dubious ethical integrity. Berg and Joynson (13) further elaborates: the potential for AI to make erroneous decisions; the question of who is responsible when AI is used to support decision-making; difficulties in validating the outputs of AI systems; inherent biases in the data used to train AI systems; ensuring the protection of potentially sensitive data; securing public trust in the development and use of AI technologies; effects on people’s sense of dignity and social isolation in care situations; effects on the roles and skill-requirements of healthcare professionals; and the potential for AI to be used for malicious purposes.

AI is an area witnessing accelerated development. Governments have been paying attention to this and recognizing the implication have been doing several activities in order to steer the direction and lay down a framework to allay the challenges and worries. Governments are also concerned that they steer this development and not have this be in the hands of private sector or academia who are currently working on this in multiple ways.

NITI Aayog, the official think tank of the Government of India (14) is coming out with a National Strategy on Artificial Intelligence. The strategy also flags important issues like ethics, bias and privacy issues relating to AI and envisions Government promoting research in technology to address these concerns. The focus is on sectors like agriculture, health and education where public investment and lead would be necessary. Digital technologies, practices, sciences, goods, and services can be enormously beneficial for human flourishing. AI can play a crucial role in capacity building of human resources for health in combating the ongoing pandemic, as well beyond that.

**Way Forward**

Therefore, a key challenge will be ensuring that AI is developed and used in a way that is transparent and compatible with the public interest, whilst stimulating and driving innovation in the sector. In other words, an ethical approach to utilize digital health technology, including AI, will enhance the capacity of the human resources for health and lead to overall health system strengthening.

**References**

1. Vijayaprasad G, Sudarshini S. Response to Covid-19: An ethical imperative to build a resilient health system in India. ***Indian J Medical Ethics***, Mar 2020; 2(3): 89-92.
2. Pandya SK. Medical Council of India: the rot within. *Indian J Med Ethics*. 2009 Jul-Sep; 6(3): 125 -31.
3. Sarbadhikari SN, A farce called the National Board of Examinations. *Indian J Med Ethics*. 2010 Jan; 7 (1); 20-22.
4. Nandan D, Agarwal D. Human resources for health in India: urgent need for reforms. Indian J Community Med. 2012 Oct; 37(4): 205–6.
5. Second joint statement of the IPHA, IAPSM and IAE- Public health approach for COVID-19 pandemic control in India. *Indian J Public Health* [serial online] 2020 [cited 2020 Jun 26]; 64, Suppl S2:84-6. Available from: <http://www.ijph.in/text.asp?2020/64/6/84/285636>
6. Ministry of Health and Family Welfare, Government of India, Telemedicine Practice Guidelines, 2020 [cited 2020 Jun 26], Available from: <https://www.mohfw.gov.in/pdf/Telemedicine.pdf>
7. Central Council of Indian Medicine, Government of India, Telemedicine Practice Guidelines for Ayurveda, Siddha and Unani Practitioners, [cited 2020 Jun 26], Available from: <https://www.ccimindia.org/pdf/CCIM_Telemedicine_Guidelines_08-04-2020.pdf>
8. Central Council of Homoeopathy, Government of India, Telemedicine Practice Guidelines, [cited 2020, May 01], Available from: <https://www.ayush.gov.in/docs/126.pdf>
9. Sarbadhikari S, Sarbadhikari SN. The global experience of digital health interventions in COVID-19 management. *Indian J Public Health* 2020; **64:** S117-24.
10. Sarbadhikari S, Ch. 18, The Future of Communication in a Digital World, In, Parija SC and Adkoli BV, Eds, Effective Medical Communication: The A, B, C, D, E of it, Springer, 2020, ISBN:978-981-15-3408-9, Chapter DoI: 10.1007/978-981-15-3409-6\_18
11. Bluedot, BlueDot’s outbreak risk software safeguards lives by mitigating exposure to infectious diseases that threaten human health, security, and prosperity, 2020: [cited 2020 Jun 26], Available from: <https://bluedot.global/>
12. Awasthi R, Pal R, Singh P, Nagori A, Reddy S, Gulati A, Kumaraguru P and Sethi T, CovidNLP: A Web Application for Distilling Systemic Implications of COVID‑19 Pandemic with Natural Language Processing. medRxiv 2020; [cited 2020 Jun 26] **doi:** <https://doi.org/10.1101/2020.04.25.20079129> Available from: <https://www.medrxiv.org/content/10.1101/2020.04.25.20079129v1> .
13. Berg RS and Joynson C; Nuffield Council on Bioethics, Bioethics Briefing Note: Artificial Intelligence (AI) in Healthcare and Research, 2020, [cited 2020 Jun 26] Available from: <https://www.nuffieldbioethics.org/publications/ai-in-healthcare-and-research>
14. NITI Aayog, Government of India, National Strategy On Artificial Intelligence, 2018, [cited 2020 Jun 26] Available from: <https://niti.gov.in/national-strategy-artificial-intelligence>